Storage concerns looming large? Our special supplement explores tools, standards and strategies for getting them down to size. Pullout begins after page 32

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March 24, 2003 ■ Volume 20, Number 12

Early Wi-Fi gear may prove risky investment

■ BY TONI KISTNER

At least for now, the "g" in 802.11g LANs stands for gamble.

In recent months, the first products based on a draft version of the 802.11g wireless LAN specification have emerged, even though the IEEE hasn't approved the standard. Nor has it undergone Wi-Fi Alliance's interoperability testing.

Gartner recently warned clients that interoperability issues could arise not just between 802.11g products but also between 802.11g and the older 802.11b, which both operate at 2.4 GHz.

See 802.11g, page 61

■ **Cisco snags Linksys for $500 million to enter booming consumer/SOHO network market. See page 8.**

Wireless Web access anywhere

802.11 wireless LAN technology has moved out from the enterprise into public hot spots. The next step will be a seamless handoff to the wireless WAN. **Page 43.**

MORE WIRELESS NEWS INSIDE:

- **CIOs take different wireless paths. Page 12.**
- **Service pricing gets more business-friendly. Page 28.**
- **How to prep your staff for the wireless LAN onslaught. Page 46.**
- **ONLINE: CTIA Wireless 2003 conference highlights, including an update on Starbucks' wireless net. www.nwfusion.com, DocFinder: 4847**

JESSICA ALLEN

3Com reviving LAN switch business

■ BY PHIL HOCHMUTH

3Com executives are intensifying their efforts to woo back the LAN core switch buyers they so unceremoniously dumped three years ago, although experts say the company still has a lot of making up to do.

Building on an enterprise initiative launched in 2002, 3Com last week made its latest reconciliation overture by entering into a joint venture with Huawei Technologies, China's largest maker of LAN core switches and routers. The company will resell Huawei's gear under the 3Com brand in the U.S. and in foreign markets

See 3Com, page 16

NEWSPAPER ■ $5.00

Users eye Windows mgmt. plan

■ BY JOHN FONTANA

Microsoft's newly minted multistage plan to create a comprehensive Windows management platform is a grand undertaking that might require a decade or longer to complete, but customers say at least the software giant is headed in the right direction.

Long criticized for its incomplete and immature tools to manage Windows environments, Microsoft responded last week with the Dynamic Systems Initiative (DSI), a wide-ranging plan to develop self-managing Windows environments based on applications capable of demanding the network resources they require.

"This has been a long time coming, and I like to see this focus on management," says Soon Huat Ang, computer systems officer

See Microsoft, page 60

More on management

Brian Valentine, senior vice president of Microsoft's Windows division, delves deeper into Microsoft's management plans.

DocFinder: 4840

www.nwfusion.com

■ **Bill Gates stumps for Microsoft's mobile strategy. See page 12.**

WISHLIST

What users want from SLM software

Real-time tools, common views called key to service-level management.

■ BY DENISE DUBIE

Increasingly dependent on their networks to realize evolving business objectives, companies are looking harder at new service-level management software.

These tools are designed to track and enforce preset service-level agreements (SLA), both with internal end users and external customers and service providers. Many vendors offer software that can help companies more quickly collect and correlate performance metrics from network components that

See Wish list, page 14

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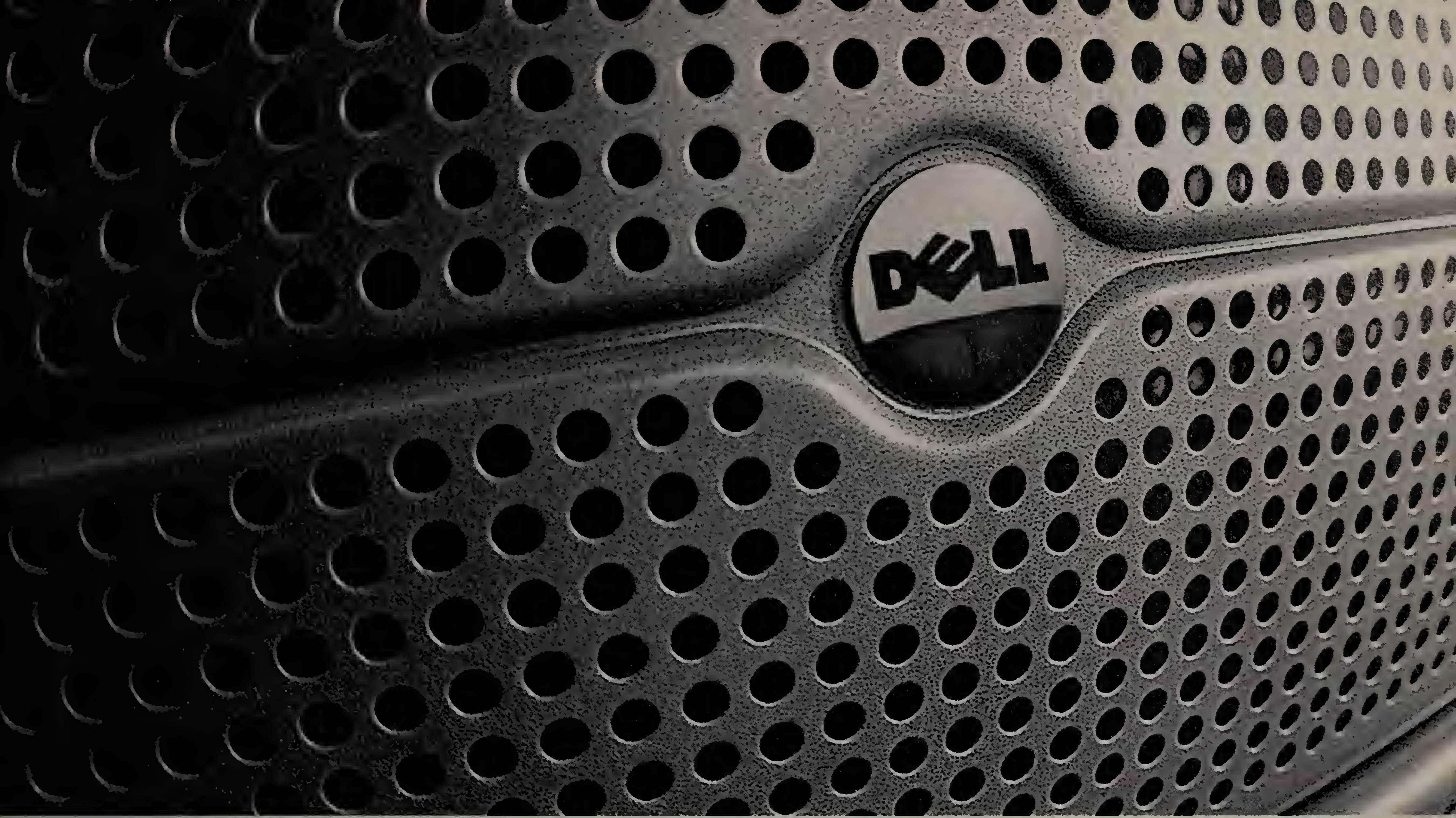

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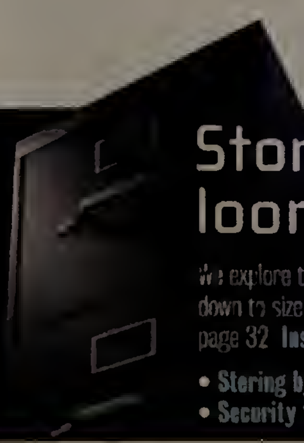

Storage concerns looming large?

We explore tools, standards and strategies for getting them down to size in a special pullout supplement beginning after page 32. **Inside you'll find:**

- **Storing by the rules.**
- **Painless provisioning.**
- **Security toss-up.**
- **Disk saves the day (and night).**

MICHAEL LLEWELLYN

Features

Open storage management is coming: Vendors are corralling support for the Storage Management Interface Specification, but will this attempt at openness pass muster? **Page 38.**

Review: Starbak's Torrent videoconferencing gateway bridges the gap between videoconferencing and streaming media. **Page 40.**

Wireless Web access anywhere: It won't be long before your laptop will be connected to the Web whether you're on your corporate LAN, in a public hot spot or traveling in between. **Page 43.**

TAVIS COBURN

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Interactive

CTIA: News and Weblog

Did you miss last week's Cellular Telecommunications & Internet Association show in New Orleans? Not to worry, we have all the hottest wireless news for you. **DocFinder: 4834**

Forum: Networking in time of war

Have you done anything different to protect your networks in recent weeks, or are general good-security practices enough? **DocFinder: 4835**

Forum: An industry of whiners

Tom Nolle says: "Enough whining on unbundling; we need to work with this decision and all its imperfections. If Powell doesn't like it, he can quit. If the RBOCs don't want to invest, let's bite the bullet and break them up." **DocFinder: 4836**

Audio primer: Digital rights management

Find out what 10 things you need to know before implementing digital rights management in your company. **DocFinder: 4741**

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Compendium

XML too irritating for him

Fusion Executive Editor Adam Gaffin introduces you to uber-programmer Tim Bray, who says XML is too hard for programmers. **DocFinder: 4837**

Small Business Tech

A question of bandwidth

Columnist James Gaskin offers suggestions on how to balance your company's speed needs and budget. **DocFinder: 4838**

Home Base

Forget do-it-yourself support

Columnist Jeff Zbar says hiring an IT outsourcing firm can save you money in the long run. **DocFinder: 4839**

Net.Worker

A really big deal

Net.Worker Managing Editor Toni Kistner says the Cisco acquisition of Linksys changes the face of SOHO. **DocFinder: 4846**

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News Bits

Cisco, Huawei step up legal battle

Cisco furthered its intellectual property lawsuit against Chinese rival Huawei Technologies last week by filing court declarations purporting to support its claims, including one from a former Huawei subsidiary employee who said the company tried several times to hire away Cisco employees to duplicate their Cisco projects. Former human resources manager Chad Reynolds, laid off from Huawei subsidiary FutureWei Technologies in December, said he was asked at least twice to locate and hire Cisco employees who had worked on projects FutureWei hoped to mimic. Reynolds said his overtures led to talks between FutureWei and a Cisco engineer who initially showed interest in the proffered job but withdrew from negotiations after becoming uncomfortable with what he perceived as a request for confidential information. Huawei responded with a lengthy filing denying many of Cisco's charges and challenging the company's legal status to bring others. Huawei also filed several counterclaims against Cisco.

Verizon pitches new data services

Verizon last week moved to broaden its wireless data plans by supporting two new services. In the third quarter, the service provider is expected to launch a "data only" service trial based on the 1xEV-DO specification in Washington, D.C., and San Diego. This specification supports mobile data transmission rates up to 2.4M bit/sec. The service provider says it also will offer 802.11b Wi-Fi wireless LAN services through an agreement with Wayport. Verizon Wireless says its Wi-Fi services will be available in the third quarter. Verizon also announced last week that it now has FCC approval to offer long-distance services in all of its territory. The service provider most recently received approval for Maryland, Washington, D.C., and West Virginia.

Why does your e-mail address get spam?

It's easy to fool e-mail harvesting software, even though the primary source for spammers' lists are addresses on public Web sites, according to a six-month experiment from the Center for Democracy and Technology. The center set up 250 dummy e-mail addresses, and during the test those addresses received a combined 8,842 pieces of spam. But about 97% of that spam — 8,609 messages — were received by six e-mail addresses listed at three Web sites: GetNetWise.org, ConsumerPrivacyGuide.org and CDT.org. Usenet newsgroup postings were the second-largest source of spam, but e-mail addresses registered at e-commerce sites, posted to online discussions on Web sites, or listed as the contact for domains in the WHOIS database generated little spam, according to the study.

COMMENTARY

Signs of life?

Two observers sense a change for the better in high tech. Jeremy Zalodny, who works in Silicon Valley, is getting recruiter calls again. Jeremy Allaire, who developed ColdFusion, says, "I'm more optimistic about opportunities for innovation and growth than I was in the early 1990s when the commercial Internet entered its first generation."

Read more at www.nwfusion.com, DocFinder: 4848.

TheGoodTheBadTheUgly

Thinking green. Toshiba has introduced a prototype of a tiny fuel cell that breaks down methanol to power portable computers. One of Toshiba's replaceable clean-fuel cartridges will last for about five hours, the company says. Toshiba says it hopes to have the lithium-ion replacement on the market by next year. ➤

Not music to their ears. As if shrinking staffs, tight budgets and network intruders weren't worry enough for network executives, now they have a new headache. The recording industry's largest trade group has sent letters to 300 U.S. companies warning of alleged acts of piracy and copyright infringement taking place on their computer networks. According to a Reuters report, the Recording Industry Association of America letter alerts companies that fines could be in order if steps aren't taken to stop the alleged theft.

To err a lot is human. "Where agencies and companies have looked primarily to technology for network safety, in over 63% of identified security breaches human error looks to be a major, underlying factor," says Brian McCarthy, Computing Technology Industry Association COO, referring to results of a new survey of 638 organizations conducted on behalf of the group. The results point to a need for better training and follow-up, according to the association.

ICANN names Twomey to top post

Paul Twomey later this month will replace Stuart Lynn as president and CEO of the Internet Corporation for Assigned Names and Numbers. Named by the ICANN board of directors, the Australian national, who will take over March 27, will be the first non-U.S. citizen to head the global Internet oversight body, established in 1998. ICANN oversees global Internet domain name administration.

SonicWall replaces leadership team

After more than a year of declining revenue, VPN equipment vendor SonicWall has shaken up its leadership, appointing a new chairman, and a new president and CEO. Chuck Kissner, who has been on the board since July 2000, replaced founder Sreekanth Ravi as chairman of the board. Former Phillips Electronics Components executive Matt Medeiros becomes SonicWall's new president and CEO, at a time when the company's revenue has been falling for more than a year. Its profits finally dipped into the red during the last quarter of 2002. Medeiros replaces Bill Roach, who served as interim president and CEO since last summer.

IETF looks for ways to improve

The Internet Engineering Task Force took a hard look in the mirror during its meeting last week in San Francisco. Members were presented with a list of problems within the organization that might be throwing a wrench into the process of how standards are developed and finalized. The Problem Working Group, formed last November after members aired concerns about the internal operations of the IETF, presented a draft statement outlining a number of problematic issues to the entire IETF. The next step is for the Problem Working Group to modify its draft statement, and ultimately submit a document detailing specific problems and how best to address them.

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EMC storage array to boost scalability

■ **BY DENI CONNOR**

HOPKINTON, MASS. — EMC is expected to announce as early as next month an upgraded version of its fixed-content storage array that boosts its scalability, availability and reliability, and preserves the integrity of stored data.

While EMC declined to comment on Centera V2, sources say the product will add these hardware and software features:

- Significantly increases the capacity of Centera V1 for storing even larger amounts of fixed-content data — data that does not change — such as CAT scans, seismic data or video files.
- An AC transfer switch, which fails over the array to a secondary power source if the primary power fails.
- SNMP support to notify the systems administrator of problems that are occurring or that the Centera is automatically fixing.
- Software features that protect data if a segment of storage fails, reclaim disk space when data is no longer needed, shred data so it can't be recovered and improve replication capability to eliminate interference with operations.

Centera and other storage devices from vendors such as Network Appliance and StorageTek use inexpensive Advanced Technology Attachment drives to store data online and close to its source, rather than cumbersome and slow-to-retrieve tape or expensive primary Fibre Channel or SCSI storage. By year-end, fixed content, also called content-addressable storage, will comprise as much as half of all data worldwide, according to a University of California, Berkeley study.

Paul Galjan, an IS director for Science Applications International, on contract to building materials manufacturer USG in Arlington, Va., has looked at EMC's Centera to manage his fixed-content application. He ultimately chose an LSI Logic array to store his fixed content because the ATA drives did not give him the scalability he needed a year ago when he bought the LSI box. He expects that has been fixed now.

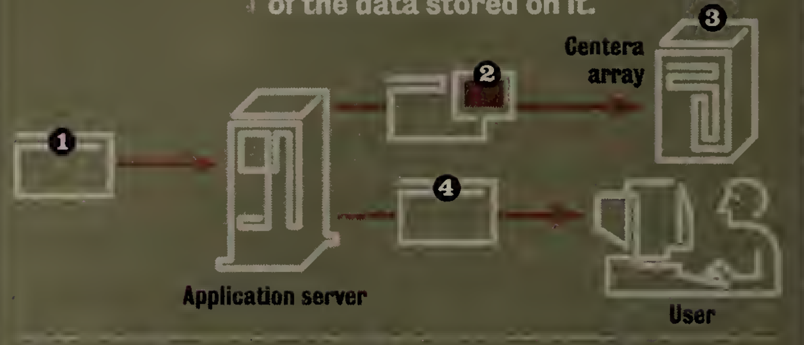
"Those users who are interested in Centera are [often] interested in capacity and price," Galjan says. "[Increasing] the capacity of the drives will reduce the number of components, thus reducing price."

The new Centera, which contains an upgraded Pentium III processor running at 1 GHz, increases disk capacity as much as 56% by using 250G-byte drives. A fully configured Centera now can support 32 terabytes of disk capacity.

■ **HOW IT WORKS**

Centera

EMC's content-addressable storage array has been enhanced with features that protect the integrity of the data stored on it.



① An application creates or uses the record.

② The Centera API residing on the application server calculates a digital fingerprint, which identifies data.

③ The record is stored on the Centera array; its authenticity is verified automatically. The digital fingerprint is retained for future reference.

④ A user retrieves the record, and the Centera authenticates it.

Among the most important features of Centera V2, users say, are the software enhancements. EMC has added content-parity protection, in which a data object is written to disk as six fragments and a parity fragment. Parity is a technique for checking that the data written to disk matches the data sent to disk. With content-parity protection, if a segment of the disk fails, the original data can be reconstructed from the fragments and the parity information. The new Centera also integrates a garbage collection feature — when Centera detects that data is no longer used or referenceable, it will collect that data and dump it, effectively recovering disk space.

Centera uses a digital-signature algorithm called Message Digest 5 (MD5) to identify data objects on disk. Applications writing fixed content to Centera use MD5 to access and retrieve data objects. Because each MD5 address is intended to be unique, EMC has added the ability to avoid collisions and data loss that could occur if the application generated data objects with the same MD5 signature.

Pricing for the upgraded Centera was unavailable. The current version, Centera V1, starts at $205,000. ■

Be a Net Know-It-All
THIS WEEK'S QUESTION:
Storage companies are increasingly supporting a standard called ATA. What does the acronym stand for?
Answer this and nine additional questions online and you could win $500! Visit **Network World Fusion** and enter **2349** in the Search box.

Cisco attempts to buy its way into home

$500 million Linksys purchase marks re-entry into consumer market.

■ **BY JIM DUFFY AND TONI KISTNER**

SAN JOSE — Cisco's $500 million stock agreement last week to buy privately held Linksys marks at least the third time Cisco has knocked on the doors of home/ consumer network customers. This time, Cisco officials says they will be let in.

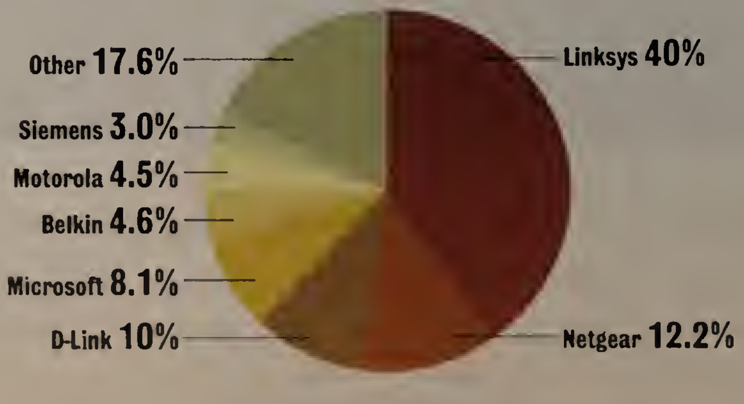
Linksys is a leading provider of wired and wireless network products for consumers and small office/home office users (SOHO). Cisco says the acquisition represents its entry into the high-growth consumer/SOHO market, which is expected to grow from $3.7 billion in 2002 to $7.5 billion in 2006 worldwide, the company says, citing data from Dell'Oro Group and Synergy Research.

Cisco's attempts to crack this market date back to 1995, with the ill-fated CiscoPro effort, which was tailored to home professionals, among others. Since then, Cisco has formed and disbanded a consumer line of business internally; demonstrated its products in "Internet home" applications and at the annual Consumer Electronics Show; and has and continues to develop and offer a broad line of SOHO routers.

"What we learned through that entire process was that it was not a question of products, but one of business model," says Charlie Giancarlo, Cisco senior vice president and general manager of product development, who used to direct the company's consumer line of business. "These [products] could not be sustained in Cisco's traditional business model. The high R&D, high support cost, high sales cost, which works great in an enterprise and service provider environment, is not the right one for a consumer model. This new business model will allow us to compete very successfully in that market."

The lion's share

Linksys is the leading vendor in the home/consumer/ retail network market, which was worth $3.7 billion in 2002.



SOURCES: NPD TECHWORLD, DELL'ORO GROUP, SYNERGY RESEARCH

Linksys' business will run as an autonomous division of Cisco, and its products will continue to be sold under the Linksys brand through its existing retail, distributor and e-commerce channels.

"This is our 81st acquisition, and for the first time the acquired company will be a standalone, separate division with its own sales, marketing, engineering and other functions," says Tushar Kothari, Cisco vice president of new business ventures. "We expect Linksys to operate with the current business model they have."

Linksys was founded in 1988 and has 308 employees. The Linksys business will report to Giancarlo.

Separately, Cisco last week brought more clarity to its voice-over-IP product line — literally — with the acquisition of SignalWorks, a maker of software for improving the sound quality of IP phone conversations. Cisco will exchange $13.5 million in stock for all outstanding shares of SignalWorks.

Cisco is ahead of last year's acquisition pace, when it bought five companies. Cisco has announced three deals this year, with the other being security company Okena. ■

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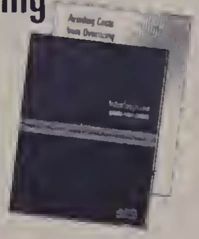

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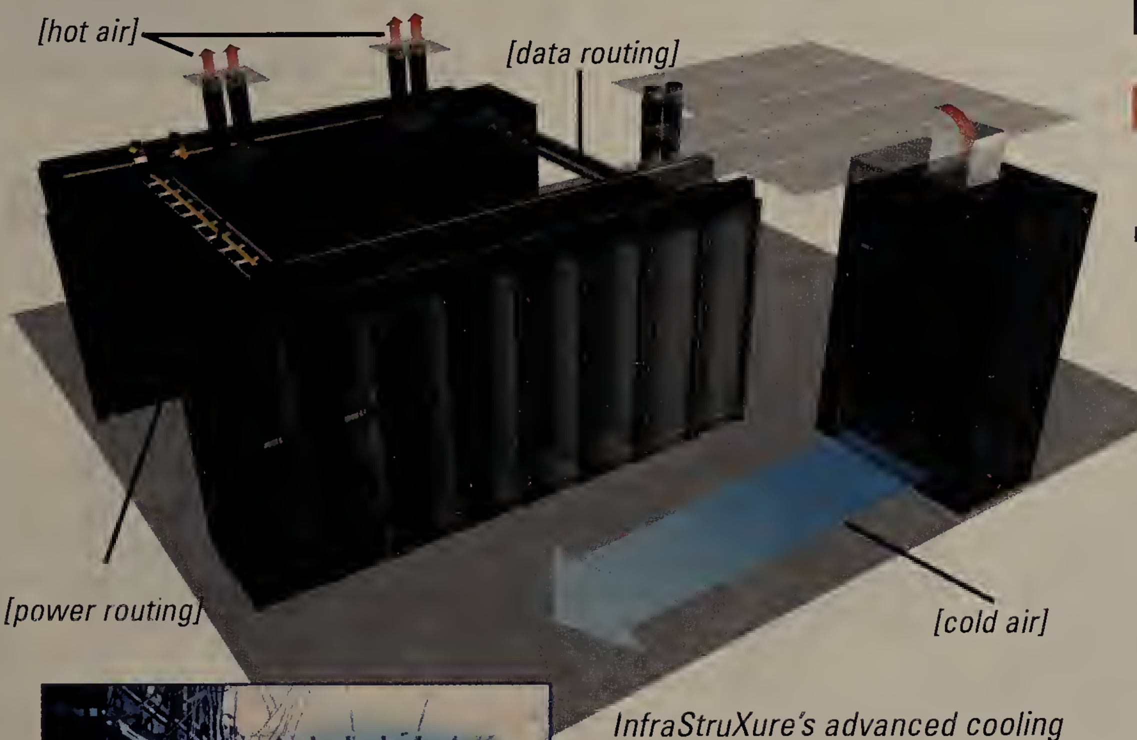

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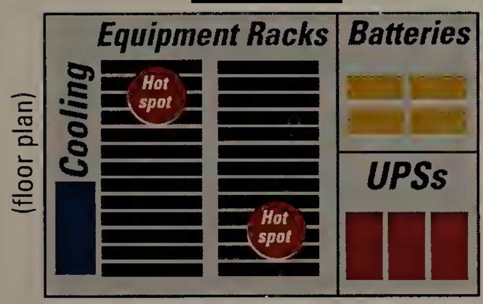

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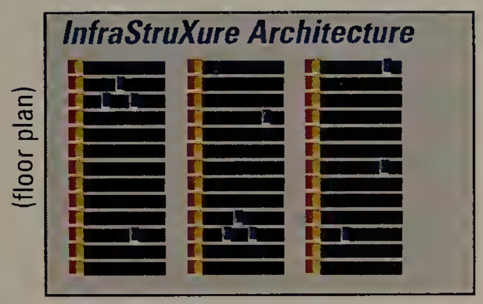

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XML security integration worries AmEx

■ BY ANN BEDNARZ

BOSTON — Identity management and service authorization remain two of the biggest hurdles in shifting from a traditional application security model to what's needed for securing XML-based Web services, according to an IT executive at American Express.

"These are the areas where we're most collectively behind the eight ball in the industry," said Phil Steitz, vice president of e-commerce applications development at the New York financial services company. Steitz spoke at last week's Web Services Edge 2003 Conference & Expo in Boston.

XML security tips

Phil Steitz, vice president of e-commerce applications development at American Express, shares advice for securing services:

- Keep services authentication and authorization policies as simple as possible.
- Reduce dependencies on Uniform Resource Identifier protection for Web apps.
- Involve security experts early in the application design process.
- Limit development of non-secure services intended for internal consumption.
- If there is a widely accepted standard, use it.
- Establish service-level agreements for production support, customer service, release management and versioning.

Vendors and businesses have a lot of experience securing applications, but securing services is a new ballgame that requires new tools, he said. Companies need to revamp their security review processes and clarify security responsibilities of business partners with which they intend to share services.

The model American Express wants to get to is one in which developers assembling applications don't have to think about every usage scenario. Multiple internal and external applications would share common services, such as an identity service provider for consistently recognizing users and an authorization service for controlling Web services access.

Getting there requires that core security components currently embedded in applications be pulled out — no easy task. "When you start to try to expose services or pull apart the underlying services driving secure applications, the security model falls apart," Steitz said.

Existing security integration technologies were designed to be embedded in applications. For example, Java 2 Platform Enterprise Edition container-based security works, but only as long as an application lives inside a J2EE container. Loose coupling eliminates security provided by containers or dedicated connections, Steitz said. Uniform Resource Identifier protection packages protect only the Web sources, operating under the assumption that there's a trusted perimeter around enterprise resources.

As a result, when developers try to reuse code, they often create brittle, customized links between applications, each of which still maintains a separate user store, he said.

On the standards front, groups have made progress with respect to identity management, Steitz said. For example, Liberty Alliance specifications and WS-Federation tackle taxonomy, roles and responsibility of identity management. Existing standards start to address single sign-on at a basic level, although the issue of identity re-establishment — if, for example, a person forgets a password and wants to restore account access — has not been resolved. The ability for a user to delegate authority — such as to let an accountant access a client's financial accounts — also needs to be addressed.

"Identity management is extremely difficult. It's one of those things that gives me headaches every time I think about it," Steitz said.

With respect to service authorization, companies need to establish procedures for making authorization requests, triggering service authorization and managing cross-domain authorization, he said.

While standards are progressing, there are still technology gaps. Steitz hasn't found a packaged product that provides industrial-strength, platform-independent and standards-compliant authorization services — meaning it's scalable to tens of millions of requests per day, cache-enabled, and allows for flexible deployment and configuration.

"I've gone away hungry every time I've asked any vendor for this," Steitz said. ■

■ Vendors are racing to help companies manage their Web services in production networks. PAGE 22.

War puts firms on heightened alert

■ BY JENNIFER MEARS

Shortly after the federal government raised its terrorism threat warning to "high" last week and President Bush delivered his ultimatum to Iraqi President Saddam Hussein, Pepco Holdings in Washington, D.C., raised its own security a notch: Visitors into the energy company's headquarters are now severely restricted.

At Consolidated Graphics in Houston, the decision was made to block employee access to video downloads as the threat of war transitioned into the beginning of one.

The University of Wisconsin in Madison stepped up its vigilance by taking a closer look at traffic passing through its routers and by keeping close tabs on information from monitoring services such as CERT.

Across the board, users were taking a second look at security, disaster recovery and other network issues because of concerns about terrorism and increased network traffic. But for the most part companies seem satisfied that security measures already in place — many instituted as a result of Sept. 11 — have them well-protected.

"Everyone is being extra vigilant," says Doug Cavit, CIO at McAfee Security in Santa Clara. "But ever since Sept. 11 there has been a lot of focus on security. . . . So you can make the argument that in some ways we're in a much better position, and we're kind of reaping the benefits of having done all that prep work."

As far as McAfee's own policies go, Cavit says the only real change as a result of the war is a reduction in travel.

"We are a lot more cognizant of people traveling and where people are. We're being respectful of the fact that people are wanting to stay closer to home," he says.

While it's unclear how much of a threat businesses actually face during wartime, analysts say it's a good idea to stay prepared. Earlier this month, Gartner launched a Weblog focusing on the conflict in Iraq and what companies should consider. It discusses everything from business continuity to e-mail policies to how to protect against hackers.

"Sept. 11 is what we're using as our indicator. . . . Those are the guidelines we're telling people to be prepared for in the event of a serious terrorist attack," says Dan Miklovic, vice president and research director at Gartner. "We see that clients have a renewed emphasis on making sure they're up to date with security, business continuity planning and disaster recovery."

Mitch Ray, manager of IT at Consolidated Graphics, says he addressed those issues after Sept. 11, moving the core of his firm's network from its corporate headquarters to its carrier's collocation facility.

"We wanted to take advantage of their physical security, network security and those kinds of things," Ray says. "I'm not sure what more we could do in that regard to protect ourselves."

Ray had concerns about network usage, though, and is using Internet filtering software from 8e6 technologies to block downloads of news feeds. Network utilization climbed above 80% on Tuesday following Bush's speech, and the block was put in place that evening. ■

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Gates pushes Microsoft mobile agenda

■ BY JOHN COX

“We are going to invest and invest and invest to get the most popular [mobile] software platform. . . .”

Bill Gates
Chairman, Microsoft

NEW ORLEANS — If Microsoft was chastened by last year's antitrust ruling, Chairman Bill Gates gave no evidence of it last week as he laid out his mobile and wireless computing ambitions.

Speaking at the first Microsoft Mobility Developers Conference in New Orleans — purposely held near the annual CTIA Wireless 2003 conference — Gates presided over the launch of the .Net Compact Framework. This is a set of development tools, code and software objects that let developers quickly build applications for an array of handheld devices that use Windows operating systems.

Gates painted a rosy view of mobile computing trends. Then he issued what could be viewed as a promise, threat or statement of fact — or all three — with regard to handheld rivals PalmSource, Symbian and Sun.

“We are going to invest and invest and invest to get the most popular software platform because we believe in these [kinds of mobile and wireless] scenarios,” Gates said.

He called the Microsoft Tablet PC operating system, introduced late last year, an “explosive form factor.” He pointed to new software platforms for “smart devices,” including sophisticated cell phones and even a wristwatch-sized network device, dubbed Spot, versions of which watchmakers Citizen, Fossil and Suunto are developing. “We're taking familiar things [from the Windows development world] and bringing them to this new form factor,” he said.

And then he reminded his listeners where the money was.

“Those who start early in writing applications for this [market] will be the winners,” Gates said.

Test versions of .Net Compact Framework have been available for months. But the finished product goes a long way toward simplifying mobile programming, according to an engineering team at Shelflink, a Cambridge, Mass., software company that was one of the first to partner with Microsoft in the Compact Framework project. Shelflink has shifted from Web and client/server development on Microsoft platforms to mobile applications.

“You can develop for handheld devices without needing expertise in that device,” says Andrew Park, a Shelflink software architect.

This first release of Compact Framework is for Windows CE .Net 4.1 and above, and for Pocket PC 2000, which is a version of CE tailored for handheld computers and PDAs. But during Gates' keynote address, Microsoft employees demonstrated Compact Framework for a future version of the Smartphone operating system, which is targeted at Internet cell phones. In the onstage demonstration, a developer created a customized “home” screen for an Internet cell phone and installed it in just a few minutes.

Gates left no doubt that Microsoft is trying to bring its dominance in desktop operating systems and application development to a mobile market that will grow to billions of devices.

He cited a recent survey that gave Microsoft's Smartphone operating system, a version of Windows CE, 55% of the U.S. market for these cellular phones that combine voice with data capabilities such as Short Message Service messaging, or Web browsing. “We're just at the start of this,” Gates said.

The .Net Compact Framework is a subset of .Net, a set of APIs, development tools and other Web services building blocks.

“Web services are a perfect fit for mobile devices,” Gates said. That's because remote servers

See Mobile, page 60

IT execs share wireless experiences

■ BY JOHN COX

“If [our plumbers] don't have a wrench in their hands, that's a cost to us. This [new wireless system] is a home run.”

Stephen Poppe
CIO, Roto-Rooter

NEW ORLEANS — A panel of CIOs speaking at last week's CTIA Wireless 2003 conference painted a vivid picture of just how varied enterprise network applications for wireless communications can be.

The Los Angeles Police Department, with about 10,000 police officers, is essentially its own network provider. The organization, which recently completed two communications centers at a cost of $265 million, runs its own voice and data wireless networks. The strategy is to have complete control over a network dedicated to emergency requirements, said CIO Roger Ham.

The department relies on relatively slow 19.2K bit/sec wireless communications. But it expects to quintuple that speed in the future to support applications such as the transfer of digitized photographs, maps and video to police on the street.

“We can't take down the whole network to send them,” said Ham, who added that 802.11 (Wi-Fi) wireless LANs also are being considered to provide broadband wireless communications in some locations.

Another panelist, Fidelity Investments' Chief Wireless Officer Joseph Ferra, said wireless use took off at the Boston mutual fund giant almost by accident.

The company's IT department started using the technology to send alerts about network events to on-call technicians.

“We realized this could be a service that we could use to send alerts to our [mutual fund] customers,” he said.

Fidelity can't control the client device, nor what cellular wireless network its customers might use. So the goal was to embrace as many of each as possible. “That was pretty difficult at the start, but it's less so now,” Ferra said.

One reason is the use of the Java programming model, which Ferra said lets Fidelity software engineers port applications from one platform to another fairly easily. “In the past, we were doing almost one-off [custom] applications,” he said.

The company is creating a wireless portal into all of Fidelity's products, including 401(k) benefits management and its nationwide airport limousine service, Boston Coach.

Bandwidth blues

Among the stumbling blocks for wireless communications is the relatively low bandwidth that wireless WANs provide.

Chuck Nettles, CTO for McKesson, said the $50 billion pharmaceutical and healthcare company is extending its use of wireless communications in warehousing to monitoring truck fleet logistics, salesforce automation and what's dubbed “point of care” — doctors and nurses with wireless access to data from the patient's bedside.

“Speeds and feeds are a limiting factor for us,” Nettles said. “They're adequate for e-mail and [personal information manager] functions internally and for customer satisfaction in functions like alerts.” But to let a group of doctors wirelessly view an MRI image, that image must be “precisely accurate,” he said.

Fidelity's Ferra said application design must take into account the available wireless bandwidth to minimize network latencies. Fidelity started with and still works extensively with the Mobitex network, which offers just 9.6K bit/sec. “But it has great in-building penetration, and you can do things with it that can make it outperform 2.5G [cellular links],” Ferra said.

McKesson's Nettles said his company is improving accuracy in other areas with the use of wireless. “Paper-based processes are subject to errors,” he said. “Wireless can let us monitor these processes and reduce error rates to under 1%.” One reason for this is that wireless applications reduce or eliminate the number of times someone has to enter data manually. Bar-code scanners and the use of alphanumeric codes automate much of this work.

Roto-Rooter, the plumbing and drain service company, has taken automation to a very high level, replacing traditional two-way radio with a sleek Nextel Java-enabled cell phone. Plumbers interact with server-based applications and the dispatch center by using a set of alphanumeric codes, and answering yes/no questions on the screen by pressing Y or N on the keypad. Bar-code scanning will let plumbers quickly input data on parts and supplies used for each job. The phone also pinpoints a user's location via a geopositioning system.

CIO Stephen Poppe said the new system will result in faster, more accurate billing and more efficient dispatching of plumbers. “If [our plumbers] don't have a wrench in their hands, that's a cost to us,” he said. “This [new wireless system] is a home run.” ■

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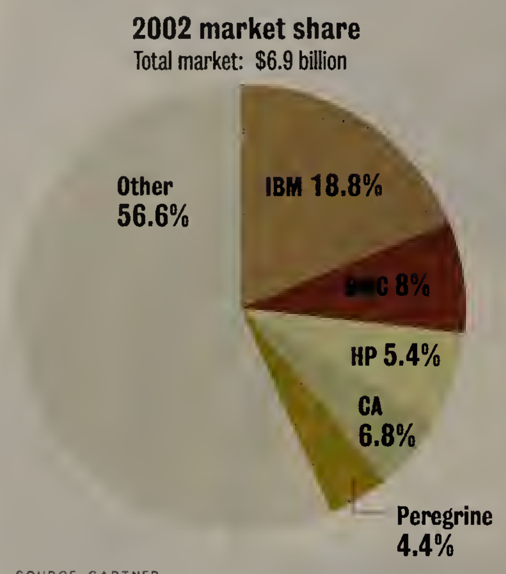
SLM sampler

Market leaders

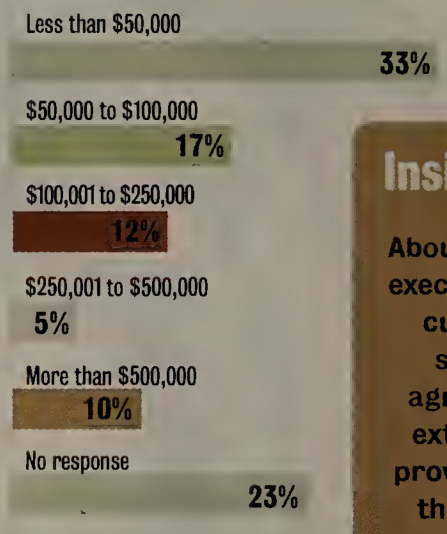
While IBM has nearly one-fifth of the service-level management software market, the rest of the market is divvied up among a slew of companies.



SOURCE: GARTNER

SLM today

About three-quarters of 773 IT professionals surveyed plan to spend part of their 2003 IT budget on SLM products and services.



SOURCE: NETWORK WORLD SLM SEMINAR

Inside and out

About 60% of 773 IT executives said they currently have service-level agreements with external service providers. 42% of the same group surveyed also maintain internal SLAs with end users.

Wish list

continued from page 1

support a business service such as a customer service desk, or an application such as online credit card processing.

"We as information technology professionals need to do a better job in supporting [our customers'] e-business applications," says Rob Shepard, regional CIO at the U.S. General Services Administration (GSA), Public Buildings Service, in San Francisco. "To remain competitive . . . it is critical that IT personnel proactively manage all of the services we provide."

Henry Wojcik, director of enterprise service management at Network Data Systems in Rolling Meadows, Ill., agrees that real-time reporting is essential to SLM. He says SLM reporting must be "available immediately" to notify network staff of potential SLA breaches. And he says real-time reporting "should be dynamic enough to slice and dice the information in many different ways."

What follows are the things network executives told us they would most like to see from SLM suppliers.

1. *Real-time tools.*

Users need SLM tools to report on service across routers, switches, databases, and Web and application servers while events are taking place to avoid poor performance affecting end users and customers. In other words, SLM software must deliver intelligent data in real time.

"In an ideal world, SLM would help the IT manager know about the problem and possibly have it resolved before the user even knows there is a problem," Shepard says.

2. *Centralization.*

To be able to manage an IT service across switches, databases, servers, desktops and more, SLM products need to collect performance metrics from multiple sources and deliver the information to IT staff in a centralized window. Network managers must be able to maneuver through the performance data from disparate devices without running from one console to another.

"We would need . . . the ability to display and manage captured data and correlate it to service levels in a single repository, a single reporting interface and engine," says Chris Holbert, director of IT at North American Scientific in Chatsworth, Calif.

Eric DuMond, senior network engineer at Data Dallas in Texas agrees. He says he needs an SLM product to "give us an interface that is easy to use and read, so we can easily begin to see and address trouble spots." His company is evaluating HP OpenView.

3. *Problem diagnosis.*

Tools can't just show network staff how services perform, but also must explain why and where any performance problems might arise. SLM tools in the past have been focused on managing the service in one area of the network. Corporate managers want today's SLM software to tell them which part of the service chain broke down and the root cause of poor service performance.

For example, SLM software could tell network managers how an application server performed separately from a database and Web server, but traditionally the IT staff would have to pore through logs and manually correlate based on time and date when and where the problem originated.

"[SLM] must have the ability to accurately pinpoint the root cause of problems, understanding the interrelationships between the components," GSA's Shepard says.

4. *Changes on the fly.*

Tracking IT services requires companies to first define and model those services. With daily infrastructure and application changes, keeping an SLM product current with each change poses a challenge.

Users say they need software to understand the network topology, incorporate relevant elements to support specific services and update itself dynamically as these elements change.

"My environment moves like the ocean's tides, and by the time you modeled every SLA that I have to keep up with, you would be six months behind," says Scott Orr, manager of enterprise management systems at Affiliated Computer Services in Dallas. "I would someday like to see a tool that keeps up with my daily changes in SLA management requirements."

5. *Smart SLM.*

Shepard adds that SLM software should be able to tell IT managers how to resolve the performance issue once it identifies the source of a problem. SLM should not only indicate, say, that an overloaded cache on an edge server is holding up the Web content on an e-commerce page, but it also should tell IT staff how to resolve that issue, either with preset rules or proven suggestions.

"There should be an effective means to identify resource availability and quickly prioritize the problem and assign the appropriate resources," he says.

Network Data Systems' Wojcik says a good SLM product also will prioritize the importance if multiple services are affected. Network managers would predefine which customers or applications get priority over others based on SLAs or other rules, and the SLM tool should be able to tell IT staff which problem needs attention first based on its potential impact.

"[Network managers] need to monitor the impact of a service and how it relates to SLAs," Wojcik says.

6. *Automation.*

IT executives also want to implement an SLM tool that eases the burden on their staffs by automating tasks. Mike Heller, senior manager in the service provider segment at Cisco in San Jose, says a good SLM product would increase productivity for IT teams looking to work on mission-critical projects.

"[SLM should] multiply the abilities of small and always busy IT groups by automating routine or time-consuming tasks, such as deploying quality-of-service or security policies across numerous network elements," Heller says.

North American Scientific's Holbert says he wants SLM tools to provide job-scheduling automation as well.

"We would need it to provide reports, perform data collection routines and more," he says.

7. *Standards-based.*

Any SLM product must be compliant with industry standards such as SNMP and work with third-party management tools. Integration should not be a challenge.

One user says SLM needs to have visibility into all the elements on the network, and another adds that it needs to be "platform agnostic."

"We need to capture data from many different sources and the capability to integrate with the [Computer Associates] Unicenter Management Console," Holbert says.

8. *SLA verification.*

A good SLM product needs to help track the details of internal and external SLAs and alert network operations when the network isn't performing up to par — and also when carriers and ISPs aren't hitting their numbers.

David Graham, telecom analyst at Hershey Foods in Hershey, Pa., wants performance specifics on how apps perform on the LAN and if that holds when they traverse corporate WANs. "Many applications that work over the LAN do not run as well, if at all, over WAN links," he says.

9. *Business and technology.*

Typically, SLM software has followed IT guidelines, but today's tools must translate how the network performs directly into how well the business is delivering on its promised services.

A sales representative might want the company's e-commerce Web site to handle 100 orders per minute. That calls for the technology team to enable databases, Web servers and application servers to deliver on those service needs in unison.

"The challenge with SLM is to make it relevant to end users, expressing IT in terms that relate to their business and not typical 'computer operations' metrics," says a network analyst at a Southern utility company.

10. *ROI.*

With IT dollars in short supply, SLM can play a key role in helping to justify expenses.

Troy Tate, corporate network manager at electronic components manufacturer CTS in Elkhart, Ind., says network monitoring and reporting tools need to show to business management how well they help keep the company in the black.

"Management needs to know what was affected, how long it was affected and what is the dollar impact to the business," he says. "We can easily get the first two answers, but an SLM system could use business rules to give us the third." ■

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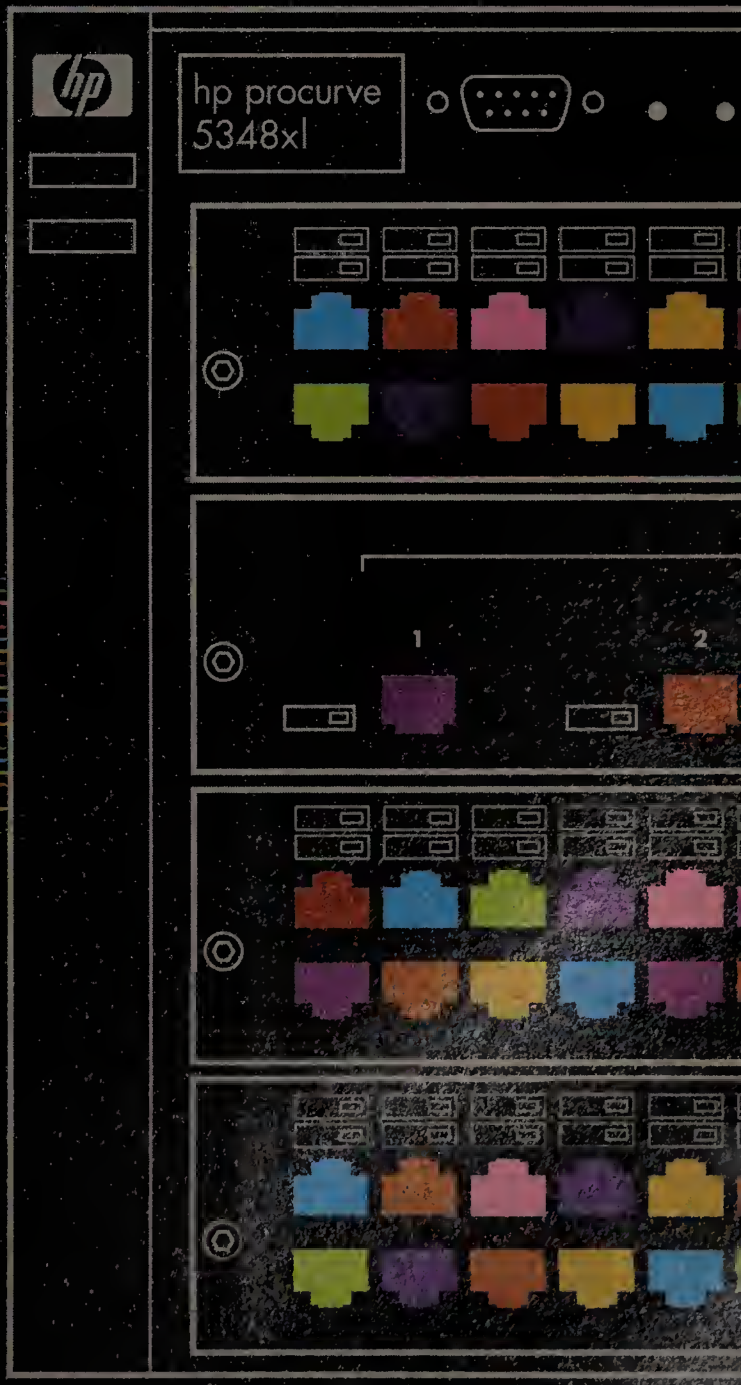

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3Com

continued from page 1

except Japan and China.

3Com CEO Bruce Claflin knows he has his work cut out for him.

"In large enterprises, I believe businesses think well of 3Com for the network edge, but they don't think of us in terms of the core of the network," Claflin says. "As we go forward, we'll demonstrate that we're a Tier 1 networking company that has a broad line of products for businesses of all sizes."

> **"Businesses think well of 3Com for the network edge, but they don't think of us in terms of the core. . . ."**
>
> **Bruce Claflin**
> CEO, 3Com

To further bolster this enterprise push, 3Com last week also said it will produce a new high-end enterprise IP PBX based on carrier-class softswitch and gateway products from 3Com's former carrier division, CommWorks, which it sold this month. 3Com is among the leaders in the IP telephony market, but its customers are mostly small and midsize organizations.

3Com is trying to extend its reach with the joint venture. As part of the deal with Huawei, 3Com will pay $160 million, and the Chinese company will contribute its enterprise network business assets, including products, engineering, sales and marketing resources and personnel, and licenses. Huawei will own 51% of the joint venture and 3Com 49%. After two years, 3Com will have the option to own 51%.

3Com also contributes its operations in China and Japan, and some intellectual property.

"3Com definitely needs to rebuild its credibility in the enterprise market," says Brian Riggs, a senior analyst with Current Analysis. Riggs adds that while it might be a tough sell to new customers, the expanded product line will be a benefit to 3Com users in a few ways. "If 3Com can lower their manufacturing [costs] and get better margins as a result of the venture, that could help stabilize the company, which would be positive for customers in the long run," he says.

3Com is teaming with a partner that makes market leader Cisco nervous. At a January financial analysts meeting, Cisco CEO John Chambers mentioned Huawei in the same breath as market powerhouse Dell when citing potential threats to Cisco's dominance.

Cisco sued Huawei in January for alleged patent infringements. The suit involves Huawei's routing software, which Cisco says is too similar to its own market-leading IOS routing code. Huawei reacted to the suit last month by pulling its Quidway line of routers and core switches from the U.S. market.

Losses still piling up

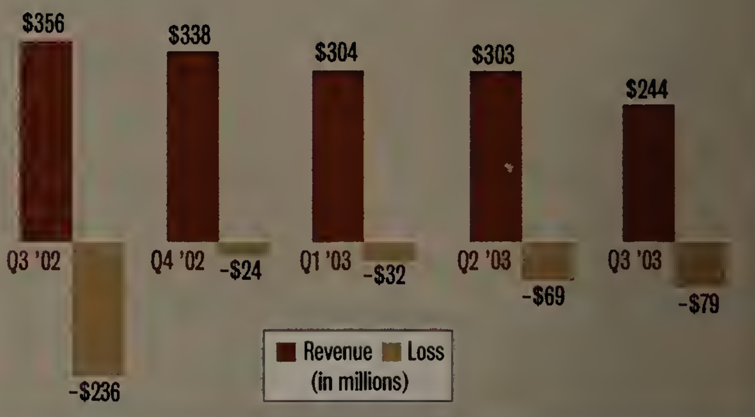
3Com last week also reported a $79 million loss in its quarterly financial results, which was slightly higher than the previous quarter's $69 million loss but better than the $227 million loss recorded for the corresponding quarter last year. Revenue of $244 million was down 19% from the previous quarter.

While 3Com slogs through the same depressed market as its competitors, the company is flush in a sense — $1.4 billion in cash and investments — which helped the company pay for its share of the joint venture.

As for the new IP PBX, Claflin says it is based on Session Initiation Protocol and can scale to hundreds of thousands of seats, compared with 3Com's NBX voice product, which scales to about 1,000 seats. The former CommWorks product will become part of the NBX product line.

3Com by the numbers

While its revenue continues to decline, 3Com's loss in the most recent quarter was significantly less than in the comparable quarter last year.



"We'll now have a [voice-over-IP product] that can go from 10 phones to hundreds of thousands," Claflin says, adding that the enterprise softswitch is in customer trials and targeted for third-quarter release.

In May 2000, 3Com began a radical restructuring effort in which it shed most of its chassis-based Layer 3 LAN switch gear and routing products aimed at the core of large networks. The company cited diminishing market share and poor margins. Claflin, who was president and COO during the restructuring, now says the market has changed and that there is more demand for an alternative vendor.

Will previously spurned enterprise customers warm up to a fresh pitch from 3Com?

Claflin foresees little trouble. "Our installed base was only around 4% at that time, which is relatively small," he says. "As for the customers that did have our products, a vast majority of them liked our products and kept them, while we lived up to our service and support commitments."

However, some former customers say bad blood lingers.

"I wouldn't go anywhere near that company," says Tony Crognale, a network technician at Scottsdale Insurance, in Scottsdale, Ariz. When 3Com pulled its CoreBuilder LAN switches in 2000, he says, "we had just invested a huge amount of dollars in the CoreBuilder line . . . and we were completely misled by them. We didn't have it installed for 30 days when they made the announcement that they were getting out of enterprise switching."

Scottsdale Insurance turned to Extreme Networks, which 3Com had named as a migration partner, Crognale says. With more than 30 Extreme BlackDiamond Layer 3 switches now in place, he says going back to 3Com is not an option.

3Com's NBX VoIP product has had success with larger companies, such as Peoples Bank in Marietta, Ohio, which recently installed NBX for its 600 employees. But some customers who deployed 3Com phones say they are not interested in tinkering with network infrastructure.

"We're 100% bought into the NBX system for now," says Steve Nulter, vice president and manager of IS, at Peoples Banks in Bridgeport, Conn. But, he adds, "we're committed to Cisco for our whole LAN and WAN infrastructure; I don't see that changing."

Claflin says new enterprise data and voice products from 3Com could ship in the third quarter. He says 3Com will work to integrate its technology, such as its management software and Layer 3 and 4 policy-based switching technology into the Huawei products. 3Com's Expandable Resilient Networking technology for meshing backbone switches with high-speed redundant links also will be integrated into the new products.

While recharging 3Com's U.S. enterprise presence, Claflin says the joint venture with Huawei also will spur growth in networking in Asia.

"I've long believed China is one of the most potentially [lucrative] markets in world," Claflin says. "It can drive a lot of growth. Our combining with Huawei there will help drive that." ■

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ServGate scales security box

■ **BY TIM GREENE**

MILPITAS, CALIF. — ServGate this week is announcing a multifunction security platform to which customers can add hardware and software as traffic and network security needs grow.

Called EdgeForce Plus, the base model supports a 200M bit/sec firewall and 45M bit/sec Triple-DES encryption to create IP Security VPNs. With the purchase of a software key called Performance Module, the firewall speed can be pushed to 250M bit/sec and the VPN encryption to 90M bit/sec.

ServGate also sells a hardware module for the Professional Module, a device that includes a 20G-byte hard drive, Web caching and URL filtering, as well as local logging to keep track of what resources users access. EdgeForce Plus appliances with Professional Module can support a McAfee antivirus software add-on. The company says it plans to add more security functions, including intrusion detection.

The Rockford Public Schools in Rockford, Mich., placed an EdgeForce Plus between the Internet and the school network as a firewall, but also uses it to screen viruses and limit Internet access for defined groups of users, says Peter Young, network operations coordinator for the schools. He says having one device perform multiple functions limits the number of network devices he must learn. He considered NetGear firewalls, but opted for the multiple functionality of the ServGate box.

Young says he installed an early release of EdgeForce Plus at the start of the school year, and plans to test its VPN and Web-caching capabilities this summer.

The ServGate box comes with several bundles of features, including 100- and 250-user packages of VPN clients that let users make secure links over the Internet between PCs and EdgeForce devices in corporate networks. The boxes come with three Ethernet ports that connect to the Internet router, the LAN, and separate, secure LAN segments known as demilitarized zones that typically house Web and e-mail servers.

The base model of EdgeForce Plus costs $3,000. Performance Module costs $1,000 extra, and Professional Module costs $500 extra. Virus-scanning software costs $245 to $2,495 to support numbers of users ranging from 10 to unlimited.

ServGate: www.servgate.com

TOLLY BENCHMARKS

March 2003

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About Tolly Benchmarks

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THE TOLLY GROUP

March 2003

WatchGuard Firebox V60 flexes firewall/VPN muscle in security tests

Test Highlights

- Delivers up to 21X more zero-loss firewall throughput than the Cisco PIX 515E and almost 1.5X the zero-loss throughput of the NetScreen-50 in tests of 512-byte frames and higher with 500 rules enabled
- Achieves up to 188% greater zero-loss VPN throughput of the NetScreen-50 and up to 75% more zero-loss throughput than the PIX 515E in tests of 512-byte frames and higher
- Outperforms the NetScreen-50 for all frame sizes in a real-world firewall configuration of 500 sessions and 500 rules, while the Cisco PIX 515E was unable to pass traffic in this test

Project Profile

Product/version name:

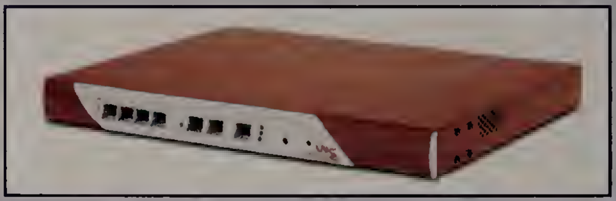
- **WatchGuard Technologies, Inc.** Firebox V60 Version 4.0
- **Cisco Systems, Inc.** PIX 515E OS 6.14
- **NetScreen Technologies** NetScreen-50 Version 4.0.1 R2

Product class:
Network security appliance

Testing date:
January 2003

Document Number:
202164

For more information:
www.watchguard.com



WatchGuard Technologies, Inc. commissioned The Tolly Group to evaluate the Firebox® V60, a four-port Fast Ethernet firewall/VPN security appliance in a variety of zero-loss throughput scenarios versus a Cisco Systems Inc. PIX 515E two-port appliance and a NetScreen Technologies Inc. NetScreen-50 four-port appliance. Tests were conducted in December 2002.

Test results show that the Firebox V60 regularly outperformed the Cisco and NetScreen security appliances, delivering up to 21X the firewall throughput of rival appliances tested and almost 190% more VPN throughput in tests of 512-byte frames or higher. Even at the most taxing 64-byte frames, the Firebox-60 performed on par or better than the NetScreen-50 and significantly better than the Cisco PIX 515E.

In a firewall scenario with 500 rules (1-499 deny, 500 allow) with NAT disabled and 2, 500 and 8,000 sessions active, the Firebox V60 forwarded between 168 Mbps and almost 200 Mbps of zero-loss throughput, when tested at 512-byte frames and higher. When compared to the zero-loss performance of it nearest rival, the NetScreen-50, results show that the Firebox V60 handled from 15% to 30% more traffic when tested at 512-byte frames and higher. The NetScreen-50 yielded between 117 Mbps and 168 Mbps of zero-loss throughput in tests of 512-byte frames and higher.

The Firebox V60 maintained its zero-loss firewall throughput lead over the NetScreen and Cisco boxes in a real-world scenario configured with 500 IP sessions and 500 rules (one per each IP address) with NAT disabled. Here, the Firebox V60 outperformed the Cisco and NetScreen products in every packet-size test scenario. In this test, the Firebox V60 forwarded between 181 Mbps and 199 Mbps in tests of 512-byte, 1,024-byte and 1,518-byte packets. That equates to a zero-loss throughput percentage gain of between 16% and 36% when compared to the NetScreen-50. Even at 64-byte frames, the Firebox V60 forwarded 32 Mbps, or 3% more throughput than the NetScreen-50; the Cisco PIX 515E was unable to pass traffic during test setup and subsequently was dropped from the test.

In VPN performance tests, the Firebox V60 delivered more zero-loss throughput in tests of 512-byte frames and above. In fact, the Firebox V60 forwarded 61 Mbps, 93 Mbps, 110 Mbps and 100 Mbps for 512-, 1,024-, 1,400- and 1,518-byte packets, respectively. This represents up to 43% more zero-loss VPN throughput than the Cisco PIX 515E and up to 67% more zero-loss throughput than the NetScreen-50.

WatchGuard

March 2003

3Com switch outclasses Cisco/HP rivals in throughput tests

Test Highlights

- ○ Achieves wire-speed throughput for all packet sizes tested
- ○ Forwards more than twice the throughput of the Procurve 4108GL and the Catalyst 4006 for all packet sizes tested
- ○ Demonstrates an aggregate bi-directional (full-duplex) throughput of 48 Gbps

Project Profile

Product name/Version:

- 3Com SuperStack 3 Switch 4924, version 3.0
- Cisco Systems, Inc. Catalyst 4006, version 12.1 WS-X4424 GB-RJ45
- Hewlett-Packard Procurve Switch 4108GL, version G.05.04, J4863A

Product Class:
Layer 2 Gigabit Ethernet switch

Testing Date:
November through December 2002

Document Number:
Test Summary 202159

For more information:
http://www.3com.com/4924

3Com Corp.'s SuperStack 3 Switch 4924 clearly outperformed a Cisco Catalyst 4006 and a Hewlett-Packard Procurve 4108GL in competitive Layer 2 Gigabit Ethernet zero-loss throughput tests recently commissioned by 3Com. The SuperStack 3 Switch 4924 distinguished itself as the fastest switch tested, providing four times the throughput of the Cisco device and approximately two and a half times the throughput of the HP device.

These tests prove that customers looking to deploy Gigabit Ethernet switches in server farms or to the network edge can rely on the 3Com solution to provide wire-speed performance.

The 3Com SuperStack 3 Switch 4924 is a purpose-built, stand-alone, stackable 24-port Layer 2 Gigabit Ethernet switch that was outfitted with copper interfaces for this series of tests. Cisco's Catalyst 4006 is a six-slot modular chassis that for these tests was populated with a SUP III Engine and a multi-speed Gigabit Ethernet switch module of 24 10/100/1000 Base-TX ports. The HP Procurve 4108GL is an eight-slot chassis that for this series of tests was populated with four six-port 100/1000 Base-T modules. Both the Cisco and the HP devices were also outfitted with copper interfaces.

In zero-loss, bi-directional throughput tests of 64-, 512- and 1,518-byte frames, the 3Com SuperStack 3 Switch 4924 significantly outpaced its rivals by providing 100% of the theoretical maximum throughput, or 48 Gbps, for all frame sizes tested. In comparison, the Cisco Catalyst 4006 only forwarded 25% of the theoretical maximum, or 12 Gbps, for all frame sizes tested while the HP Procurve 4108GL delivered 38% of the theoretical maximum, or 18.2 Gbps, when handling 64-byte frames, and roughly 42%, or an aggregate of 20.2 Gbps, with the 512-byte and 1,518-byte frames.

From a frames-per-second perspective, the 3Com SuperStack 3 Switch 4924 delivered an aggregate of 71.4 million frames per second (fps) bi-directionally when handling 64-byte frames compared to the Catalyst 4006 at 17.9 million fps and the Procurve 4108GL at 27.1 million fps. When handling 512-byte frames, the 3Com device delivered an aggregate of 11.3 million fps compared to the Cisco device at 2.8 million fps and the HP switch at 4.6 million fps. When handling 1,518-byte frames, the 3Com SuperStack 3 Switch 4924 forwarded an aggregate of 3.9 million fps while the Catalyst 4006 forwarded 1 million fps and the Procurve 4108GL delivered 1.6 million fps.

3com®

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Tasman 1004 Router eclipses quartet of Cisco T1 routers

Test Highlights

- Achieves 100% zero-loss throughput in multi-link configurations of dual and quad T1 interfaces for all packet sizes tested with QoS, NAT, OSPF and ACLs enabled
- Provides up to 3X the throughput of the Cisco offerings in tests of 64-byte packets in all scenarios tested
- Delivers line-rate bi-directional (full-duplex) throughput of 12 Mbps and 6 Mbps across four and two aggregated multi-link PPP T1 links, respectively

These days, every IT budget dollar has to stretch as far as it possibly can. The market for T1 access routers provides ample evidence.

Customers today expect line-rate throughput and non-blocking architectures that deliver wire-speed, zero-loss throughput for multi-link configurations over multiple aggregated T1 connections.

In testing this past January, Tasman Networks, Inc. proved that its Tasman 1004 access router outperforms a gaggle of Cisco Systems Inc. access routers by forwarding 100% of line rate in all scenarios tested for the complete range of packet sizes. In contrast, the Cisco devices were capable of wire speed in some scenarios, but faltered when handling a range of smaller-sized packets.

Tasman Networks commissioned The Tolly Group to evaluate the Tasman 1004 router, a four-port T1-based router for small and medium businesses that gives multiple users access to the Internet or to wide area networks (WANs) over reliable broadband T1 lines.

Quad T1 test results show that the Tasman 1004 forwarded 100% of the theoretical maximum throughput, an aggregate of 12 Mbps for all packet sizes tested. In comparison, the Cisco 1751 only forwarded between 3.8 Mbps and 9.3 Mbps; the Cisco 2691 forwarded between 10.5 Mbps to 12 Mbps and the Cisco 3725 forwarded 11.3 Mbps to 12 Mbps.

In zero-loss throughput tests across a pair of aggregated links, the Tasman 1004 forwarded 100% of the theoretical maximum throughput, an aggregate of 6 Mbps for all packet sizes tested. In comparison, the Cisco 1720 forwarded only between 2 Mbps to 6 Mbps and the Cisco 1751 forwarded only between 2.9 Mbps and 6 Mbps.

With Tasman Networks' 1004 router, users have a high function wide area router, delivering full line rate for up to quad T1 connections while performing NAT, QoS, OSPF and IP filtering. Since a majority of Internet traffic (over 50%) consists of small packet sizes, the capability of the router to sustain a minimum packet size load with zero loss is important to the overall performance of the applications within a site.

Tasman Networks elected to go head-to-head in tests with its device pitted against both high-end (2691 and 3725) and low-end (1720 and 1751) Cisco routers. The Tasman 1004 performs comparably to the high-end Cisco devices as demonstrated in the quad T1 performance results. Performance results in the dual T1 configuration show that the Tasman 1004 provides more than twice the throughput of the low-end Cisco routers when handling 64- and 128-byte packets and the Tasman device provides performance results comparable to the Cisco devices for 256-byte packets and larger.

Despite the additional overhead incurred by NAT, QoS, OSPF and IP filters, the Tasman 1004 consistently delivered the equivalent of full T1 bandwidth in all test scenarios while the performance of the Cisco devices fluctuated.

Project Profile

Product/version name:

- Tasman 1004 router, version 7.0
- Cisco 1720 router, version 12.2(11)T
- Cisco 1751 router, version 12.2(8)YJ
- Cisco 2691 router, version 12.2(8)T4
- Cisco 3725 router, version 12.2(8)T5

Product Class:
T1 access router

Testing Date:
January 2003

Document Number:
Test Summary 202163

Product info:
http://www.tasmannetworks.com/

Tasman
NETWORKS

March 2003

Nortel Networks' Alteon 2424 surpasses rivals in L7 session scalability tests

Test Highlights

- ❍ Delivers up to 4X more sessions/second than Cisco's CSS 11503 and F5 Networks' BIG-IP 5000 in zero-loss connection rate tests with 200 clients creating 1 million sessions
- ❍ Maintains 51,000 requests/second with zero session loss and Layer 7 filters enabled
- ❍ Increases session rate to 51,250 sessions/second when subjected to a real-world traffic scenario, while Cisco and F5 session rates remained unchanged or slipped

In the world of Layer 7 switching, session scalability is of paramount importance to sustain strategic applications running atop of IP network infrastructures.

With that in mind, Nortel Networks commissioned The Tolly Group to evaluate the Alteon Application Switch 2424 against switches from Cisco Systems, Inc and F5 Networks. Nortel Networks asked The Tolly Group to evaluate the session rate of the Alteon 2424 against a Cisco Systems Content Services Switch (CSS) 11503 and an F5 Networks BIG-IP 5000. The session rate constitutes the number of sessions supported by the switch on a per-second basis. Tests were conducted in January 2003.

Test results show that the Alteon 2424 delivers three to four times the session performance of the Cisco and F5 Networks switches with zero session loss, while actively filtering content for a real-world mix of traffic sizes.

Engineers measured the device session rate in a scenario using a single client/server Gigabit Ethernet port pairing in which engineers created 1,000,000 constant sessions requesting 1 byte of data in this test scenario. Here the Alteon 2424 delivered 51,000 sessions/second with zero session loss, or more than four times the number of sessions supported by the Cisco CSS 11503, and three times the performance of the F5 Networks BIG-IP 5000.

Next, engineers continued the connection rate testing, this time using a real-world mix of traffic sizes including 64-, 512-, and 1,024-byte requests. These traffic sizes represent common real-world traffic the Layer 7 switch would encounter. The Alteon 2424 achieved 51,250 sessions/second, actually improving slightly the previous session rate. Meanwhile, Cisco's CSS 11503 maintained its session rate at 12,400 sessions/second, while the F5 Networks BIG-IP 5000's session rate degraded by 1,000 sessions/second to 15,400.

Project Profile

Product/version name:

- **Nortel Networks** Alteon Application Switch 2424, running Alteon OS version 20.1.1
- **Cisco Systems, Inc.** CSS 11503, version 5.20 outfitted with CSS5-AM: Cisco CSS 11500 Session Accelerator Module and CSS5-SCM-2GE: Cisco CSS 11500 System Control Module
- **F5 Networks, Inc.** BIG-IP 5000, version 4.5

Product class: Layer 7 switch

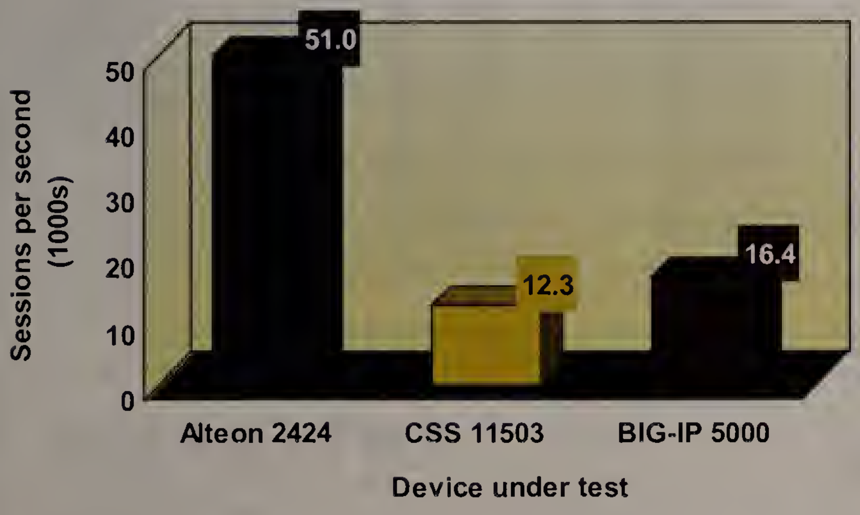
Testing date: January 2003

Document Number: 203100

For more information:
www.nortelnetworks.com

Steady-State Connection Rate with Zero Session Loss with 1-Byte Requests Using 200 Clients Creating 1,000,000 Sessions

As Reported by Ixia's IxWeb



In a third scenario, The Tolly Group attempted to ascertain each device's absolute maximum session rate. This testing was conducted by creating 1,000,000 sessions of 1-byte files, with all three DUTs forwarding at the Ixia IxWeb maximum port rate of 66,000 sessions per second. The Alteon 2424 forwarded at a maximum of 64,495 sessions/second with an average of 59,964 sessions/second. Cisco's CSS 11503 handled 21,203 sessions/second and F5 Networks' BIG-IP 5000 achieved 11,512 maximum sessions/second.

The Alteon 2424 emerged as the most scaleable Layer 7 switch tested in terms of overall sessions supported. The order of magnitude increase in the session rate of the Alteon 2424 over the Cisco and F5 Networks products means that organizations deploying Layer 7 switches for Internet/intranet applications and other enterprise applications can confidently use the Alteon devices in high-volume TCP/UDP traffic scenarios.

NORTEL NETWORKS™

Enterasys' branch office routers top Cisco in head-to-head routing, QoS and VPN tests

XSR-1805 delivers up to 7 times the VPN throughput of a Cisco 2651XM

Network edge devices, such as branch routers, have emerged as pivotal devices in enterprise networks where they are positioned to deliver wire-speed Ethernet and Fast Ethernet access to enterprise backbones. These devices rely upon features such as Quality of Service and access control lists to police data and ensure proper bandwidth utilization.

Recent head-to-head testing conducted by The Tolly Group shows that the performance of some Cisco Systems Inc. branch routers may well buckle when services such as QoS and ACLs are activated, while the equivalent Enterasys Networks routers deliver high bandwidth without missing a beat. Enterasys commissioned the branch office router tests.

Full-duplex routing–Enterasys is more than 3X faster

In one set of performance benchmarks between an Enterasys XSR-1850 Security Router versus a Cisco 2651XM Modular Access Router (both modular devices), the XSR-1850 delivered full-duplex Fast Ethernet throughput of 95% or greater on three of five frame sizes tested. By contrast, the highest full-duplex Fast Ethernet throughput a Cisco 2651 could muster was just 31% of the theoretical maximum – which equates to 61 Mbps. When handling 1,518-byte frames, the XSR-1850 delivered 199.6 Mbps, or 99.8% of the theoretical maximum throughput. The Cisco 2651XM achieved just 61 Mbps of throughput with the same frame size.

Project Profile

Product/Version name:

- Enterasys XSR-1850, v. 3.0.0.0
- Enterasys XSR-1805, v. 3.0.0.0
- Cisco Systems, Inc. 2651XM, v. 12.2(8)T5
- Cisco Systems, Inc. 1751, v. 12.2(8)T5

Product Class:

Branch office router

Testing Date:

November 2002

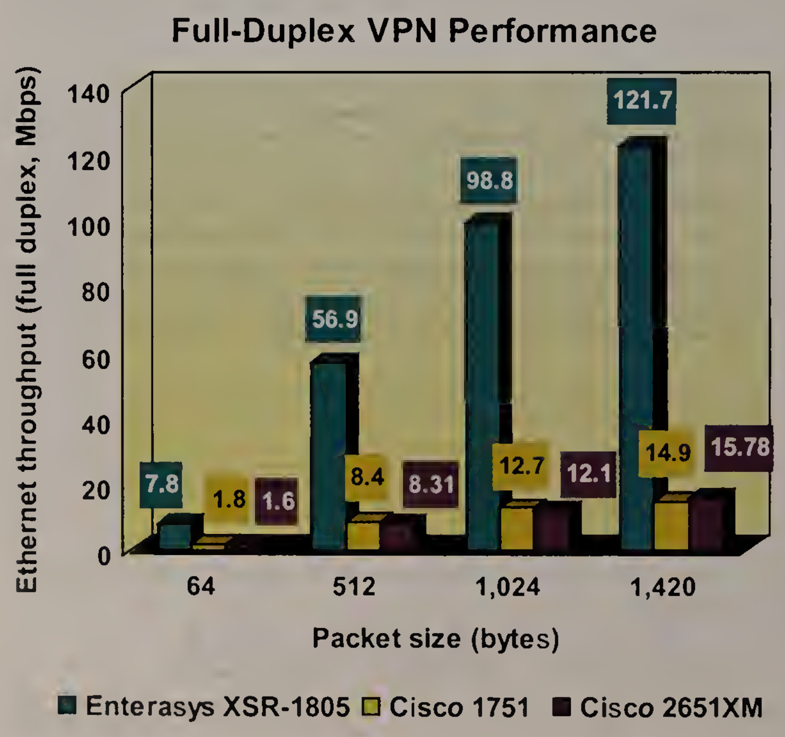
Document Number:

Test Summaries 202154, 202155, 202156

For more information:

http://www.enterasys.com/performance/

Engineers also tested an Enterasys XSR-1805 and a Cisco 1751, conducting zero-loss (≤0.001%) bi-directional (full-duplex) Layer 3 throughput tests and zero-loss Layer 3 throughput with QoS and ACLs enabled. Here again, the XSR-1805 performed flawlessly, delivering 20 Mbps of full-duplex Ethernet across all frame sizes tested. By contrast, the Cisco 1751 stumbled with 64-byte frames, delivering 16 Mbps, or 80% of the theoretical maximum throughput. The Cisco 1751 handled all other frame sizes at wire speed.



Enterasys delivers wire-speed throughput with QoS

With QoS enabled, the XSR-1805 again delivered wire-speed throughput at all packet sizes. The Cisco 1751 only forwarded 40% of wire speed when handling 64-byte packets, 47% when handling 256-byte packets and 97% when handling 512-byte packets in the same scenario. Like the XSR-1805, the Cisco 1751 forwarded 100% of line rate at 1,024- and 1,518-byte packets. With a variety of ACL rules enabled, the XSR-1805 delivered from 51% to 91% of wire-speed throughput, while the Cisco 1751 delivered between 60% and 75% of wire-speed throughput.

VPN Performance–Enterasys is 7X faster

In head-to-head VPN performance tests against a Cisco 2651XM in a Fast Ethernet scenario, the XSR-1805 forwarded ***four times*** the throughput of the Cisco 2651XM at the smallest packet size of 64 bytes and sustained the performance advantage even up through the largest packet size of 1,420 bytes providing more than ***seven times*** the throughput of the Cisco 2651XM.

ENTERASYS
NETWORKS™

March 2003

Siemens IP phone excels at voice quality in tests versus Cisco, Pingtel

Test Highlights

- Provides superior or equivalent voice quality compared to rival vendor products tested
- Maintains lower end-to-end delay when compared to rival products tested
- Delivers greater management functionality than rival products tested

Recent tests of IP telephones from Siemens, Nortel Networks and Pingtel Corp. reveal that only the Siemens optiPoint 400 standard delivers the flexibility and requisite toll quality for use in networks designed to support either the H.323 protocol or the Session Initiation Protocol (SIP).

Siemens Enterprise Networks commissioned The Tolly Group to evaluate its optiPoint 400 standard telephone against a Cisco 7960G and a Pingtel xpressa in tests of call quality, end-to-end delay, manageability and feature-by-feature comparison. Tests were conducted from November 2002 through December 2002.

The Tolly Group utilized the Perceptual Evaluation of Speech Quality (PESQ) algorithm to measure the call quality supported by the IP telephones under test. PESQ is an enhanced voice-quality measurement that takes into account delay, jitter and produces an end-to-end voice quality metric. With PESQ, scores range from -1 to 4.5, with scores above 3.8 representing excellent voice quality.

From a call-quality perspective, the optiPoint 400 standard was the only IP telephone tested to demonstrate support for H.323 and SIP, while simultaneously delivering excellent voice quality well beyond the 3.8 PESQ threshold for acceptable toll-quality voice.

Project Profile

Product/version name:

- **Siemens optiPoint 400 standard**, version 3.1.19 (H.323 tests), and version 2.0.9 (SIP tests)
- **Cisco Systems 7960G**, version 4.1
- **Pingtel xpressa**, version 2.1.2

Product class: IP telephone

Testing date:
November 2002 through December 2002

Document Number: 202165

Product info:
http://www.siemens.com

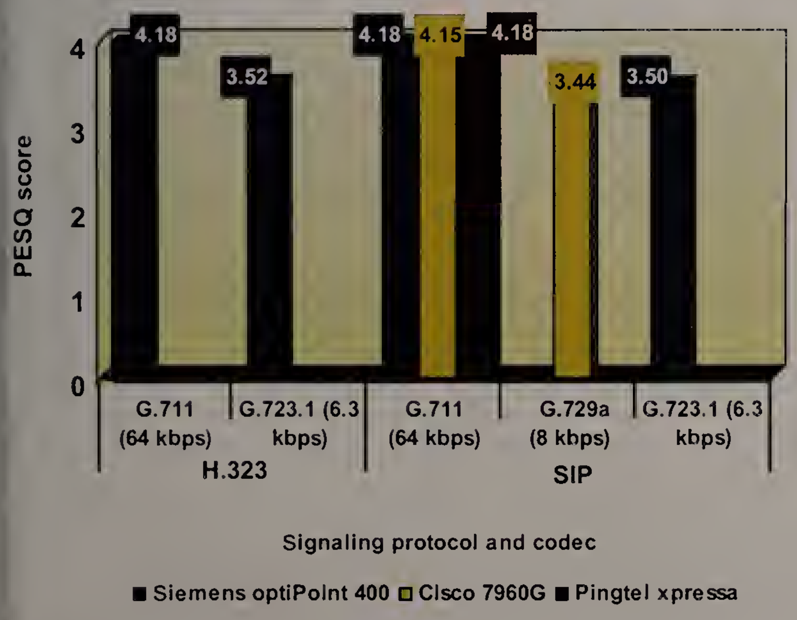
Test results demonstrate that the optiPoint 400 standard performs equivalently superior to other IP telephones tested. PESQ testing demonstrated the optiPoint 400 standard and the Pingtel xpressa yielded a 4.18 PESQ score for a call placed using the G.711 voice encoder/decoder (codec) – G.711 is the equivalent of a 64-kbps call that uses no compression. The Cisco 7960G obtained a slightly lower (i.e. worse) result of 4.15, though still providing excellent voice quality. (See figure below.)

The optiPoint 400 standard also delivered near toll-quality voice when utilizing a G.723.1 codec transmitting voice at just 6.3 kbps, or nearly 1/10th the bandwidth of a G.711 call. More significantly, the optiPoint 400 standard achieved a higher voice quality at G.723.1 rates than did the Cisco 7960G utilizing a G.729a codec transmitting voice at 8 kbps.

The optiPoint 400 standard demonstrated the lowest incidence of delay – just 65 milliseconds (ms) using the G.711 codec in a scenario supporting SIP. The optiPoint 400 standard achieved between 13% to 57% less delay than rival products tested – a key indicator when handling delay-sensitive voice traffic.

It is important to note that, while there are variations in the scores, having an end-to-end delay of 150 ms or lower is considered acceptable for most voice applications based on ITU-T G.114 recommendation. The results also prove that the selection of signaling protocols does not directly affect the voice call quality.

Perceptual Evaluation of Speech Quality (PESQ)
As Reported by Agilent Voice Quality Tester



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- SERVERS ■ OPERATING SYSTEMS
- VPNS ■ NETWORKED STORAGE

Getting down to the wire with copper Gigabit

■ BY PHIL HOCHMUTH

GETTING READY FOR **Gigabit**
First of three parts

Some organizations building out copper-based Gigabit Ethernet networks are finding that when it comes to squeezing the most out of 1000Base-T, the devil is in the details. And the details have a lot to do with cable.

While most 1000Base-T switch vendors say their products are certified for use with Category 5, 5e and the newer, sturdier Category 6 cable, users and others say your megabits/sec might vary depending on the type of cable used and how it is installed.

"You have to be a lot more careful with the cable if you're installing it for Gigabit Ethernet," says Tim Hadden, project manager for Cache Valley Electric, a company that installs cable for businesses in Utah, Colorado and California.

"When wiring a building for 10/100 [M bit/sec], the cabling was more forgiving," Hadden says. "You could kink it and bend it and still get full performance." But when planning for Gigabit Ethernet, "you have to be much more careful with the little things, the termination of the wires and how cables fit into the jacks," he says.

Experts say that there are many cable-related issues that can slow copper-based Gigabit Ethernet. A big one is delay skew — the mis-synchronization of signals over different wire pairs. Gigabit Ethernet uses all eight wires, or four twisted pairs, in a Cat 5/6 cable to transmit data. The technology provides a 475-nanosecond window for fragments of a packet to arrive from the four pairs of copper wires at a given endpoint.

This window is required because cable makers twist the wire pairs to cut down on cross-talk, or signal interference, among wire pairs. The twisting results in wires of different length causing the signals to arrive at slightly different intervals. If signals miss the window, the packet is dropped and must be sent again. These retransmissions can choke a Gigabit pipe down to 500M bit/sec worth of throughput.

"As more customers migrate to Gigabit, especially to the desktop where the cable runs are longer, these issues will come up more often," Hadden says.

Some cable vendors have released products in the last quarter aimed at addressing some issues that can slow high-speed

See Gigabit, page 18

Short Takes

■ **Legato Systems** has released software that lets data from numerous servers be backed up to disk at the same time. In contrast, data can be saved to tape only one server at a time, causing longer back-up times. The company's **NetWorker 7** offering also adds the capability to work with servers running Windows 2003 Server, Linux, Mac OS X, IBM's AIX and HP's True64 Unix. Also new is the ability for customers to share tape drives across clustered environments and let users back up network-attached storage devices to disk via the Network Data Management Protocol. The software starts at $3,000 per server. **www.legato.com**

■ Network-attached storage start-up **Spinnaker Networks** last week rolled out a version of its **SpinServer 3300** that supports inexpensive ATA disk drives, letting customers use them as a substitute for tape for real-time backup or near-line archiving of data that doesn't change and is accessed often. ATA drives, while not as inexpensive as tape, have been adopted as alternatives to tape because of the speed at which data can be recovered from them. Estimates from Enterprise Storage Group say data can be saved to and recovered from ATA drives up to six times as fast as tape. The SpinServer 3300 is a self-contained system that competes with EMC's Celerra and Network Appliance's F800 and FAS 900 file servers. The ATA option for the SpinServer 3300 is $50,000 for two terabytes of capacity. **www.spinnakernetworks.com**

URoam policies restrict remote access

Company upgrades software on SSL-based remote-access box.

■ BY TIM GREENE

SUNNYVALE, CALIF. — URoam says a software upgrade to its appliance makes it possible for companies to give remote users different levels of access to network resources depending on the machine from which they call.

With the refreshed FirePass software, uRoam says companies can restrict access for a user logging on from an Internet kiosk, for example, vs. from a home office. This feature also is designed to give network executives the ability to create user group that have access to more or less of a network's resources.

"This gives me a couple of layers of management," says John Harford, director of IT enterprise network services for software vendor SAP. "I might want to give everybody access to Windows Terminal Server applications, but not Layer 3 network access." SAP has rolled out FirePass for its U.S. employees, and if all goes well will expand that to its worldwide workers.

A competitor, Whale Communications, recently announced a similar feature (see www.nwfusion.com, DocFinder: 4831). Others in the market include Aspelle, Aventail and Neoteris.

These vendors follow a general model in which a remote machine with a standard Web browser connects to a Secure Sockets Layer (SSL) proxy server located behind a corporate firewall. The remote machine then authenticates and establishes an SSL session that is proxied to the target server for e-mail and Web-based applications.

Using ActiveX downloads, uRoam can expand this access to other applications using only a browser. If a remote machine has full client software for any IP client/server application, uRoam's FirePass can issue an ActiveX control to allow remote access to the server.

Policy-based access lets SAP use FirePass as a sales tool, Harford says. Potential customers can log on to SAP's network to view and test certain applications and be restricted to only those applications. With a remote-access IP Security VPN, the remote machine would require a separate VPN client that would grant network level access. Harford says uRoam limits a customer or business partner's access. "I don't have to worry about him running amok and hitting every IP address in my network," he says.

With the new FirePass 3.5 software, uRoam also is adding integration with directories such as Lightweight Directory Access Protocol (LDAP) or Active Directory for purposes of authorizing network access. So an administrator can define a group of users based on certain fields in an LDAP directory, and FirePass checks group definitions against the directory to see what group users belong to as they log on. FirePass then grants only those privileges each user is entitled to based on their group.

URoam is adding support for Microsoft Exchange Cluster for clusters of messaging servers, FTP downloads and drive mapping. The latter feature lets remote users access corporate network drives as if their machines were located on the LAN.

The new version also lets FirePass appliances back up each other so if one fails the other takes over without dropping sessions. ■

SSL explosion

Vendors sold
$18 million
in SSL-based remote-access gear in Q4 2002. Calendar year 2006 sales will hit
$1 billion.

SOURCE: INFONETICS

WIRED WINDOWS

Dave Kearns

Not the same old NetWare and Windows

In addition to my fortnightly visit to the pages of this august journal, I also supply Network World Fusion with semi-weekly newsletters in three different areas. Two of those deal with NetWare and Windows servers. In both I'm right in the midst of a series of issues previewing the new features and functionality of the upcoming server releases from Novell and Microsoft.

Some pundits have alleged that NetWare 6.5 and Windows Server 2003 (aka Windows 6.0) are only minimal improvements over their predecessors, NetWare 6.0 and Windows 2000. If you look at the core operating systems, that might be close to being true (if the lighting is low, and you squint) but that's not the important thing about these upcoming releases.

Provo and Redmond face the same problem — users who are quite happy to continue using Version 4 of their server operating systems. Heck, Novell still has a significant number of users running Version 3 of NetWare, but it appears there's absolutely nothing else Novell Vice Chairman Chris Stone and his crew can do to get those 15- to 20-year-old systems uprooted. So they no longer try.

But both Stone and Microsoft CEO Steve Ballmer know that the fiscal well-being of their companies rests with enticing people to trade up from NetWare 4.X and 5.X to NetWare 6.5, and from NT 4 and Windows 2000 to Windows Server 2003. Both, it seems, have learned a lesson from the automakers.

Gas-mileage requirements have pretty much dictated the aerodynamic design of today's automobiles. The radical designs of the late 1950s and early '60s might never be seen again. So automakers compete on interior features and add-ons. And that's where the new network server operating systems also will compete. It's less about competing with each other, though, and only partially about competing with Linux and Unix systems. The real battle is to get those older operating systems upgraded and updated. After all, the network managers running those older systems already believe they have made the right choice of vendor, so half the battle is won.

Both Novell and Microsoft are adding large amounts of utilities and functionality to their servers, including major features to overcome traditional weak areas — application services for NetWare and security services for Windows. If you are running older NetWare or Windows be sure to check out all the new goodies on offered in the new systems shipping in the next few months.

Kearns, a former network administrator, is a freelance writer and consultant in Silicon Valley. He can be reached at wired@vquill.com.

Tip of the Week

Just in case you haven't bothered to subscribe to the great newsletters offered on **Network World Fusion,** head over to www.nwwsubscribe.com/foc15/ and sign up now. I can especially recommend the NetWare, Windows Networking and Identity Management newsletters!

Gigabit

continued from page 17

LAN links.

Ortronics this month announced patch panel and cable products designed to monitor cable performance. Running through the shielding of its cables is an extra wire, which hooks into a separate port on patch panels. The patch panels can be monitored by hooking a serial port on the panels into a separate IP-based network appliance. This appliance runs software that can monitor the status of patch panel links and can let users access a Web-based monitoring application to view the link status of any patch panel connection.

Also this quarter, Krone released its AirES 2 line of Cat 5e and Cat 6 cable products that use air pockets instead of insulating materials to insulate the cable, making the cable smaller.

This reduced size allows for less variance in lengths of twisted pairs, which results in less delay skew, the company says. Krone says its cabling products can shorten delay skew to about 18 nanoseconds, allowing less packet loss and higher Gigabit Ethernet throughput. The air pockets make the cable one-third smaller than most commercial Cat 5e and Cat 6 products, the company says.

Putting it to the test

Many users have put Gigabit Ethernet over copper to the test, as approximately 4.8 million 1000Base-T ports were shipped last year, according to Gartner. Most of those ports are on backbone switches tied directly to server links via short patch cables.

Sequenom, a San Diego genetics research firm, is one company buying into copper Gigabit. It has 90% Cat 6 cabling deployed throughout its newly built headquarters, where it uses copper to connect servers and a few desktops with Gigabit Ethernet.

"We haven't had any problems with Gigabit over copper since moving into the new building," says Mats Vilhelmsson, IT manager for Sequenom.

While a new building with Cat 6 can be more than adequate for Gigabit, the cabling itself can be thicker — sometimes 50% wider in diameter — than Cat 5 or 5e — because of extra shielding and insulation. That means fewer cables will fit into conduits and ducts, a fact that has to be considered before deployment.

"The size of Cat 6 is the biggest issue with it," says an IT manager from a large pharmaceutical firm. "If you've had Cat 5 in the past and you want to switch to Cat 6, you're just not going to get as many drops down to the desktops as you had before."

The manager says he is in the process of upgrading the corporate backbone to 10G Ethernet, with fiber Gigabit connections to the corporate servers. With Gigabit to the desktop being a future need, especially with some of the research staff, he says his approach is to buy best and "not skimp."

"Cabling is only 15% to 20% of your total datacom and telecom infrastructure costs," he says. "There's no reason to try to pinch pennies with cabling; that's for when you buy the electronics." ■

Copper Gigabit gotchas

These cable-related issues can hurt performance of 1000Base-T connections, especially longer runs such as Gigabit desktop links.

Delay skew: The mis-synchronization of signals among the four wire pairs used in Gigabit Ethernet can lead to packet drops and slower bandwidth.

Attenuation: While the IEEE says 1000Base-T can reach up to 300 feet over copper wiring, the signal on a cable could weaken depending on the wiring used.

Distance: While fiber-based Gigabit connections can reach for up to 10 miles, 1000Base-T has a limit of about 300 feet. If copper Gigabit links are stretched near the limit, kinking or sharp bends in a Cat 5 or Cat 6 cabling can impede performance.

Apple set to serve up clustering machine

■ **BY TOM KRAZIT**

CUPERTINO, CALIF. — Apple next month plans to ship a dual-processor version of its XServe server that has been optimized for clustering.

The new XServe is a stripped-down version of the regular XServe, designed for applications that don't require as much file-server capability, such as Web serving, says Doug Brooks, an Apple product manager.

A configuration with two 1.33-GHz PowerPC G4 processors, 256M bytes of DDR333 (double data rate 333-MHz) synchronous dynamic RAM, a 60G-byte hard drive, Gigabit Ethernet and a 10-client license for Mac OS X will cost $2,800. Apple sees a typical configuration in which clustered XServes will be connected to a fully configured server that allows for an unlimited number of file transfers, Brooks says.

Limited file-transfer needs

Clustered servers need only limited file-transfer capability between neighboring servers. Dual Gigabit Ethernet support lets XServe quickly exchange data with the head server and the other clustered nodes, Brooks says.

The 10-client license also prohibits companies from using the clustered XServe as a general-purpose server, says Gordon Haff, an analyst with Illuminata. This protects sales of the unlimited Mac OS X license available with the regular XServe, he says.

Users can add memory to the XServe when ordering and replace the removable hard drive after they receive the server, Brooks says.

Apple will not bundle any specific load-balancing software with XServe, but the company is pointing customers toward a number of commercial and open source software programs such as Sun's Grid Engine, Brooks says.

Dual Gigabit Ethernet support lets XServe quickly exchange data with . . . clustered nodes.

Analysts say Apple has had success selling its XServers to life sciences companies and expects more of the same with the new version.

Krazit is a correspondent with the IDG News Service's Boston bureau.

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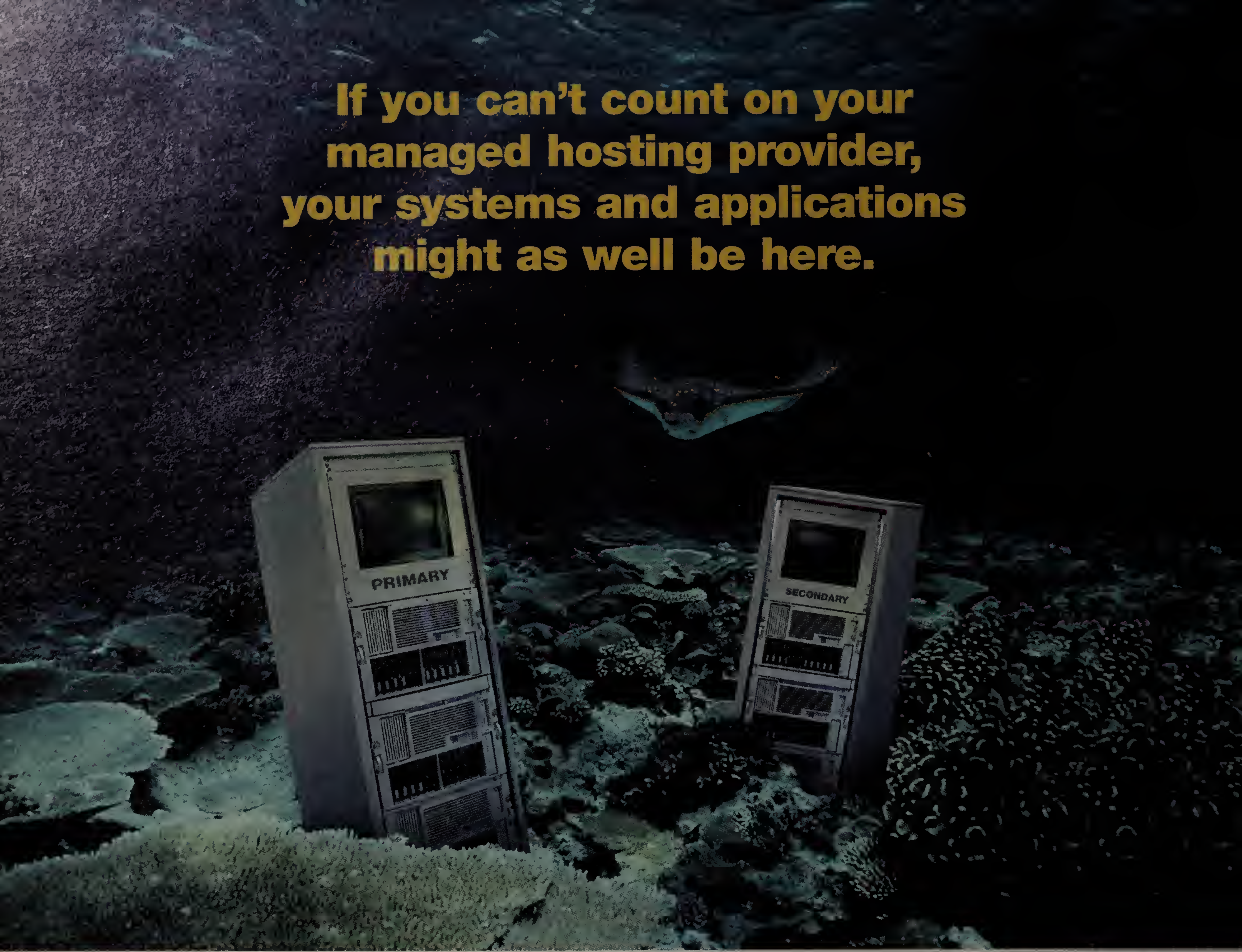
*ICSA Labs 6th Annual Computer Virus Prevalence Survey 2000 (www.ICSA.net). †The Observer, January 13, 2002 (www.observer.co.uk/Print/0,3858,4334388,00.html). ‡IDC Bulletin '02. ©2002 by Trend Micro Incorporated. All rights reserved. Trend Micro, the t-ball logo and Control Manager are trademarks or registered trademarks of Trend Micro Incorporated. All other company and/or product names may be trademarks or registered trademarks of their owners.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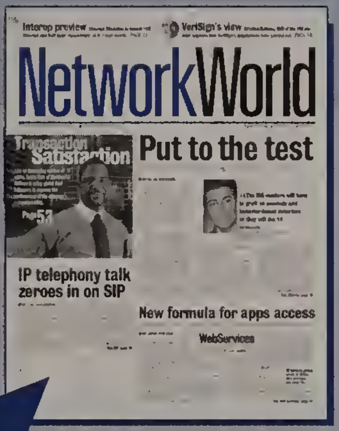

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Antivirus software gets spam filter

BY ELLEN MESSMER

CUPERTINO, CALIF. — Symantec this week will join the growing lineup of vendors trying to stem the flow of junk e-mail when it releases Symantec Antivirus for SMTP Gateway Version 3.1.

Symantec has added a way to set up a so-called blacklist in Antivirus for SMTP Gateway to block mail from known spam sources and e-mail relays, as well as a whitelist of trustworthy e-mail domains that don't require filtering. Symantec's venture into spam control mirrors that of its main antivirus competitors, Network Associates and Trend Micro.

Symantec is developing its antispam technology in-house, while Trend Micro has licensed gateway technology from spam-filtering service Postini. Network Associates bought antispam software vendor Deersoft with the intention of offering desktop antispam protection and gateway appliances later this year.

Heuristics approach

Antispam filtering in Antivirus for SMTP Gateway uses the same kind of heuristics investigative approach, based on pattern-matching, that Symantec uses. This approach helps catch a new virus before a signature update is available, says Chris Miller, Symantec product manager. This approach isn't perfect, and there is a risk of legitimate e-mail being mistaken for spam and blocked, but Symantec says such error rates are acceptably low.

Spam stopper

Symantec takes aim at spam in its AntiVirus for SMTP Gateway Version 3.1 offering, which features:

- Subject-line blocking.
- Blacklists to filter out known spam and whitelists to allow mail from business partners.
- Heuristics technology to decipher content typical of spam.
- Support for 125 third-party address-blocking lists.

One beta tester agrees.

"We do get false positives using the Symantec heuristics, but it's less than 1%," says Brett Roquemore, senior LAN administrator at Ferguson Enterprises, a Newport News, Va., distributor of plumbing and air conditioning equipment.

Symantec's spam filter in Antivirus for SMTP Gateway also supports the use of 125 third-party antispam lists of known spammers or spam relays.

The Symantec spam filter, which costs $10 for each user for 200 users or more, and as much as $15 for less than 25, directs suspected spam into a separate mailbox. At Ferguson Enterprises, that mail is checked each day to see if anything that looks legitimate somehow got pulled aside by mistake. Spam now accounts for close to 50% of the mail traffic at Ferguson, and typically 80% on weekends.

The Symantec management console Event Manager for Antivirus can now collect some information about spam, such as the total number in a given period, but management of the antispam settings is limited to a Web browser.

Symantec: www.symantec.com

Short Takes

■ **Entercept** has announced an updated version of its host-based server intrusion-prevention software, **Entercept 4.0,** which adds support for the HP-UX and Solaris 9 operating systems. Entercept also has redesigned its software to follow a three-tier, rather than a two-tier, management architecture so that up to 5,000 servers running Entercept can be managed from one console, as opposed to 1,000 servers previously. Entercept 4.0, which is priced starting at $1,300 per server, includes wizards to create customized rules and role-based global administration.
www.entercept.com

■ **NetIQ** last week announced Version 2.0 of its **VigilEnt Password Manager.** The software automates password management and provides self-service password reset and creation capabilities to users. NetIQ acquired the product when it bought PentaSafe last October. Password Manager 2.0 is one product in the VigilEnt Administration and Identity Management suite that NetIQ says will further the company's security management offerings. New features include asset prioritization for password changes, user group delegation, secure permissions for access, more support for Windows accounts and easier installation. Password Manager 2.0 is installed on a dedicated server and user agents that reside on managed devices to collect data and take automated actions. Pricing for VigilEnt Password Manager is based on a per platform, per user basis, starting at $15 per user.
www.netiq.com

Reporting tool exploits real-time data

Start-up's suite uses instant messaging, e-mail, Short Message Service to present data.

BY ANN BEDNARZ

MOUNTAIN VIEW, CALIF. — Iteration Software last week unveiled its debut product: reporting software that alerts users within seconds of when a significant business event occurs, such as a rash of $1 million customer orders or inventory shortfalls.

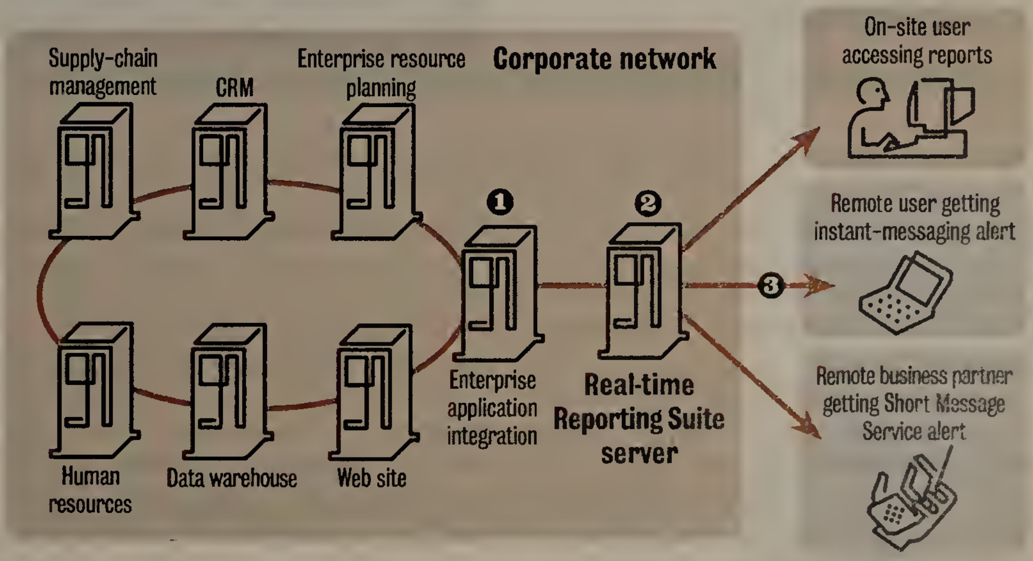
Iteration's Real-time Reporting Suite differs from traditional business intelligence software in that it gathers data from messaging systems that are relaying transactional information between applications. It doesn't rely on a data warehouse or batch reports, which make stored information available for later review. It also uses instant messaging, e-mail and Short Message Service technology. The company's goal is to make users aware of business problems or opportunities as they happen, speeding resolution.

Iteration's software gets its information by tapping into the messaging streams of enterprise application integration (EAI) middleware from vendors such as Tibco,

See Iteration, page 22

Instant reporting

Iteration's Real-time Reporting Suite taps into middleware messaging streams to get the latest transaction information.


Corporate network
Supply-chain management
CRM
Enterprise resource planning
Human resources
Data warehouse
Web site
①
Enterprise application integration
②
Real-time Reporting Suite server
③
On-site user accessing reports
Remote user getting instant-messaging alert
Remote business partner getting Short Message Service alert

①
Enterprise application integration (EAI) middleware brokers the exchange of transaction information among disparate business applications and data stores.

②
Real-time Reporting Suite taps into EAI messaging streams and extracts transaction information according to user-defined parameters. The software pools new and stored data, and creates reports on the fly for business users.

③
Users can view Web-based reports via desktop, laptop or PDA. Instant-message-based alerts push new information to users.

'NET INSIDER

Scott Bradner

A view from too near

Don't try to say no to fellow *Network World* columnist Johna Till Johnson. I ran into her at a party the other day and got to talking about the state of the world (the technical world, that is; the real world is too much of a downer for parties). I mentioned that, after 10 years. I was leaving the Internet Engineering Task Force's Internet Engineering Steering Group.

She said, in effect "So write about the IETF," while hinting that the IETF just might not be the place where future Internet standards would be coming from. I replied that I wanted to wait a while because I was still too close to be able to have a reasoned view. She would have none of that, and the result is this column.

In early 1993 I was asked to join the IESG. Every two years since then I've been asked to continue until this year. The IESG is what passes for management in the IETF. The IESG tries to ensure that IETF documents are clear, problem-free and timely. How effective the IESG is at these tasks, and what tasks the IESG should be doing, is under review.

Obviously, quite a bit has changed in the Internet world in the past 10 years. Most of what people think of when they think of the Internet — particularly the Web, ubiquitous e-mail (accompanied by ubiquitous spam) and search engines — were, at best, in their infancy in 1993. The number of people on the 'Net has grown from a handful of millions to more than a half billion. Since 1993, the IETF has published more than 2,000 requests for comments (RFC), including more than 600 standards track documents. Being on the IESG, I read, or at least skimmed, most of these documents — which is a lot of technology that, at this point, blurs together all too well.

Maybe to goad me, and maybe seriously, Johna hinted that she thought that time and technology were beginning to pass the IETF by. She could be right. Or she could just be yanking my chain. But one thing that's not open to debate is the fact that recently, at least, the IETF has had some very big wins. Here are some concrete examples:

- IP telephony. SIP, the IETF's specification for IP telephony, has become universally accepted by vendors and users.
- MPLS. While deployment is far from universally accepted, there's no debate that MPLS represents a workable scheme for integrating traffic engineering and QoS capabilities as well as VPN support into the IP infrastructure that carriers require.
- A plethora of applications beginning to be widely deployed, including iCall (distributed calendaring), IPP (printing), Webdev (Web development) and LDAP (database access).

To sum it up, there is no real competition for the IETF's e-mail, routing, Web transport, network monitoring and security standards. So even though not all the 600-odd standards RFCs that I've reviewed and commented on during my tenure were earth-shattering, many of them concretely changed the way we all designed and built networks. And that tells me that regardless of anything else, the IETF has done some pretty good work.

Meanwhile, I will continue to be actively involved in the IETF, but now I will be able to pay attention to the things I want to rather than what I need to.

Disclaimer: And I'll be more involved at Harvard, but that does not mean the university shares this evaluation.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Mgmt. vendors focus on Web services

■ BY JOHN FONTANA

Now that companies are moving beyond Web services pilots, the race is on to help them manage the technology in their production networks.

Actional this week will ship its Web services management platform, which includes Version 4.0 of its SOAPstation proxy, and a new management and policy engine called Looking Glass, and a set of agents. The pieces combine to provide corporate users a big-picture view of how Web services on their networks are intertwined.

Separately, Digital Evolution last week released DE Management Server 2.0, which features a new policy manager, a routing agent and the ability to run on its own instead of being restricted to deployment on an application server.

The companies' offerings compete with those from other vendors such as Amberpoint, Confluent, Infravio and Talking Blocks.

Management is becoming a key Web services issue given the technology's integration capabilities. That corporations can quickly build a tangled web of connections among applications that is hard to manage — especially when changes have to be made — is another factor.

"Our clients have concerns about long-term management when Web services proliferate," says Bob Parker, vice president and general manager for strategic infrastructure at AMR Research. "If I'm going to make a change I need to know where my Web services are used, what services call them and what services are dependent on them. Management tools let me look across that and see how changes will affect my infrastructure."

Land of the giants

By the middle of next year, traditional large-system management vendors will begin to dominate the Web services management market, while point-product vendors will hit their peak in 2005, according to research firm ZapThink.

Parker says the biggest challenge for these emerging management players will be convincing large corporate customers to make strategic bets on their technology.

Actional will use its expertise in enterprise application integration to make its case. The company developed its Web services system using its SOAPstation proxy, which manages the connection between clients and Web services. It has added a set of Active Agents that — when deployed with a Web service — monitor and report on Web services' behavior. Those two pieces connect to the new Looking Glass server, a management and policy engine. The server collects utilization, performance and other information from the SOAPstation and agents.

"If you build your applications on a service-oriented architecture and you don't have a firm management foundation you are risking your business," says James Phillips, senior vice president of marketing for Actional.

The Actional management platform costs $250,000 for the typical installation including SOAPstation, Looking Glass and agents.

Digital Evolution is adding a policy engine to its Management Server, which runs on Unix, Linux and Windows 2000, and supports Universal Description, Discovery and Integration 3.0, which lets users create a Yellow Pages of Web services.

The company also has added a routing feature to its Management Points technology, a set of agents used to monitor network activity. The feature supports four types of routing: by identity, content, quality-of-service parameters and multiprotocol.

Management Server pricing starts at $150,000.

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Iteration

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Vitria and webMethods. As an event or transaction occurs in an enterprise system, such as a procurement or inventory application, the EAI middleware puts the information from that event into a message queue and makes it available to other applications — including Iteration Real-time Reporting Suite.

Iteration's software also taps into historical data stored in existing relational data sources, such as Microsoft SQL Server, Oracle and IBM DB2, and legacy data sources such as flat files. It then combines all the information and presents it to business users in various report formats.

The idea of merging real-time data-streams with historical information stored in relational databases is important, says David Folger, vice president at Meta Group. "Integrating the historical data and the real-time data with the same analytic applications is a key to making it work," he says.

Instead of storing the information it collects in a relational database, Real-time Reporting Suite pulls the source data into a persistent, memory-based cache that can process up to 11,000 records per second, the company says. New messages streamed into the data cache add to or update existing information. Monitoring features can detect changes in data, system events or transactions.

Reports delivered to a user's screen are updated automatically as the underlying data changes; the user doesn't have to send a new query or manually refresh the report to see the latest information, the company says. The software also lets reports be analyzed and annotated by multiple users collaboratively.

Iteration Real-time Reporting Suite costs $25,000. Typical enterprise deployments average up to $250,000.

Serial entrepreneur

Iteration is CEO Ken Gardner's fifth start-up. Before founding Iteration in February 2002, Gardner co-founded business intelligence software maker Sagent Technology in June 1995. His other company also includes database reporting tool-maker ReportSmith, which was purchased by Borland in 1994.

Iteration is a young, unproven company and it isn't alone in pursuing real-time reporting — every business intelligence software maker is interested in getting closer and closer to real-time data availability, Meta Group's Folger says. "Data warehouses used to be updated every month and every week, then every day and every hour. Now there's other tricks to update them even quicker," he says.

But so far, Iteration's tactic of using messaging streams for direct data access and instant messaging for alerts is unique. "Iteration takes a different approach to getting real-time data than the other business intelligence vendors typically have," Folger says. ■

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Short Takes

■ **Sprint** last week named **Gary Forsee** its new CEO after weeks of legal maneuverings. BellSouth, Forsee's former employer, took legal action to block him from joining Sprint, citing a noncompete clause in his contract. Forsee was BellSouth's No. 2 executive before his departure. Although the court is letting Forsee join Sprint, over the next year he is restricted from participating in some merger-and-acquisition discussions and restricted from recruiting BellSouth employees and participating in marketing plans in BellSouth's territories. **William Esrey** will remain as Sprint's chairman during a transition period. COO **Ron LeMay** also will stay on for a time. Esrey and LeMay are essentially being forced out because of their use of tax shelters that prompted an IRS investigation.

■ Interconnection and collocation firm **Switch and Data** is augmenting its peering capabilities with the $40 million purchase of **PAIX.net.** Through the acquisition, Switch and Data will get all six of the PAIX peering points, which are in Atlanta; Dallas; New York; Palo Alto, Calif; Seattle; and Vienna, Va. Switch and Data executives say the acquisition will boost its customer base to 400 and will bring the number of networks available to those customers to 250.

■ While application service providers have gone through cycles of hype and dismissal, a new survey by the **Information Technology Association of America** indicates that they are providing real benefits to businesses. The survey results released last week show that ASP customers were using ASPs to let them focus on core business issues, save money, reduce risk, gain access to highly specialized IT staff, and support customized applications. When asked why the ASP model has been slow to catch on, customers pointed to issues such as IT worries about loss of control and loss of investment in in-house software and infrastructure.

Verio broadens VPN services

Site-to-site IPSec tunneling defines SafeGuard VPN.CPE service.

■ BY TIM GREENE

DALLAS — Verio is set to offer a spectrum of managed IP Security VPN services by mid-year. The move will enable customers to use Internet VPNs for remote access or site-to-site connections using gear that is placed at customer locations or within Verio's network.

This week the company is adding a service called SafeGuard VPN.CPE, a managed service that connects sites securely using VPN hardware placed at each customer site.

Initially, the customer-premises equipment (CPE) is Cisco VPN routers, but Verio plans to expand that to include Cisco PIX firewall-based VPN appliances as Cisco makes provisioning tools available and as Verio technicians become more familiar with the equipment, Verio says. The company plans to add NetScreen appliances as an option later this year.

Similar offerings are available from WorldCom and XO Communications, but Verio is trying to set itself apart with its service-level agreements, says David Willis, an analyst with Meta Group.

Verio promises customers a notification within 15 minutes of an outage, four-hour mean-time-to-repair problems and replacement of broken gear within 24 hours.

"They're entering a pretty crowded market, but if they continue to have backing from NTT [the major Japanese carrier] they won't be simply some small start-up attempting to get big and gain some credibility," Willis says.

With SafeGuard VPN.CPE, Verio will place CPE at each customer site, where it will create IPSec tunnels among sites. The gear will be shipped to customers and Verio will remotely provision the VPN using a service from SmartPipes. Under that arrangement, Verio network administrators in Dallas will tap into SmartPipes' network operating center in Dublin, Ohio, to configure VPNs for Verio customers using SmartPipes' graphical provisioning tool.

SmartPipes software connects with individual CPE machines and performs detailed, command-line-by-command-line provisioning necessary to create the designated VPN. The idea is to reduce the difficulty in reconfiguring routers and servers site-by-site using command-line interfaces — a time-consuming job that requires a high-level technician.

The service is available in the 22 U.S. markets Verio serves and in other countries where the company sells services. Verio charges per site, per month starting at $800 for a site connected by a T-1 line to $4,000 for a site connected by an OC-3. One-time set-up costs range from $1,000 to $1,500.

Verio has renamed its network-based VPN service to SafeGuard VPN.NET. Later this year, Verio plans to roll out a remote-access VPN service called SafeGuard VPN.RA for individual PCs to access corporate networks via the Internet. ■

Managed VPN services

These top five providers of VPN services based on gear placed at customer sites use this equipment:

AT&T	WorldCom	Sprint	Genuity	Qwest
Check Point	Cisco	Cisco	Check Point	Check Point
Cisco	Lucent	Nortel	Cisco	Cisco
Nortel	Nortel		Nortel	
	WatchGuard			

SOURCE: IDC

Sprint PCS rolls out telemetry services

■ BY DENISE PAPPALARDO

NEW ORLEANS — Sprint PCS last week announced PCS telemetry services that are designed to offer users flexible machine-to-machine data options.

The offerings, which were launched at the CTIA Wireless 2003 conference, will let users remotely monitor a utility meter or a fleet of trucks, or download point-of-sale (POS) transactions over Sprint's wireless network.

The service will run over Sprint PCS' national Code Division Multiple Access wireless network. And while telemetry applications typically use low bandwidth, Sprint PCS' service will support applications that require more bandwidth. The carrier's digital network supports data transmissions of up to 56K bit/sec and up to 70K bit/sec when compression algorithms are used.

Sprint PCS also is looking to offer users an alternative to Cellular Digital Packet Data (CDPD) services from companies such as AT&T Wireless and BellSouth, says Ryan Slack, director of business marketing at Sprint PCS. These services eventually will be phased out as these carriers continue to upgrade their networks to support 2.5G and 3G technologies. CDPD maxes out at about 14.4K bit/sec, while full 3G networks will support mobile data transmissions of up to 144K bit/sec.

The higher speeds will let users, such as those in law enforcement, deploy applications that are not practical with slower networks, Slack says. Today many law enforcement agencies use CDPD networks that limit the amount of data a police officer on the road can receive. PCS telemetry services would allow a police officer to receive a photo of a suspect after he enters in a license plate or driver's license number, he says. "That's not possible with slower telemetry services today," he says.

See Sprint, page 27

On the rise

The wireless telemetry market is expected to grow from $1.8 billion to $8.2 billion by 2007.

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EYE ON THE CARRIERS

Johna Till Johnson

Presence should be on more minds

Most of us have figured out some basic rules for reaching other people: If it's urgent or if you've never met before, you make a phone call to their landline. If you're sending detailed information, you send e-mail, perhaps with an attachment. If you're friends and just touching base, you might send an instant message or call their cell phone.

This approach assumes three things: first, that you've got all the relevant contact information; second, that their preferences on how to be contacted correspond with your preferences for contacting them; and third, that nothing ever changes (people don't decide to temporarily prefer being called instead of e-mailed, for instance).

> **Don't you think it's time for phone companies to wake up and pay attention to presence?**

Most of the time at least one of these assumptions is wrong — and you end up playing voice mail tag, or seeing your e-mail messages getting sucked into a giant black hole.

What if it were possible to avoid all these rules of thumb by querying a global database to find out not only how to reach a person but where they are currently and how they'd prefer to be approached? For example: "Johna Johnson is currently at her desktop accepting e-mail and instant messages but not telephone calls."

Or, "Johna Johnson is away from her landline and desktop but reachable by cell phone or e-mail."

And imagine if that information were followed by the options: "Click here to contact Johna by her preferred options now . . . or click here to leave a message for her to contact you later."

The database might provide different responses based on the identity of the inquirer. For example, "If you're a telemarketer, Johna is never, ever available. But if you're a client, the phone number at the emergency room where she's being treated is 555-1212."

That, in a nutshell, is the concept of presence. Technically speaking, a presence server is a directory capable of storing the information described above — in real time. If you move out of cell phone range or turn off your phone, for example, the presence server no longer lists your cell phone as a way to reach you immediately.

A handful of vendors are beginning to wrap their minds around the concept of presence and how to implement it in the real world. An even smaller handful of IT executives are exploring how presence can make them, their staffs and their organizations measurably more productive.

Presence represents one of those once-in-a-decade paradigm shifts (like telephony and e-mail) that radically changes the way people interact and that it will have a substantial effect on vendors, users and next-generation communications services.

The weird thing is not one phone company executive I've spoken with has the faintest clue what I'm talking about. You'd think they'd pay some attention, if for no other reason than competitive concerns. Phone companies have spent trillions of dollars over decades building an infrastructure for connecting phones to other phones. But the presence paradigm is all about connecting people to people — phones might not even be involved. Don't you think it's time for the phone companies to wake up and pay attention to presence?

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Sprint PCS

continued from page 25

But the majority of telemetry applications require only small amounts of data to be transmitted in real time or according to a schedule that's set up by the user, Slack says.

Sprint PCS is targeting vertical markets, including POS, automatic teller machines, transportation, utilities, security, asset and building management, field sales and service industries.

Sprint PCS also has signed deals with telemetry service providers that target vertical markets. Those companies include American Trash Management, Commerciant, NCR, TransData and Trimble.

Wireless devices from AirLink and Novatel Wireless have been certified by Sprint PCS for use with its telemetry services.

Sprint declined to provide pricing information for PCS Telemetry services, stating that they vary greatly depending on application and even the time of day that transactions would take place.

Sprint PCS: www.sprintpcs.com

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Special Focus

WIRELESS BUSINESS PACKAGES: Providers get competitive with user-friendly features.

Wireless services tilt toward business

■ BY DENISE PAPPALARDO

Shopping for wireless services has gotten easier and less expensive as the majority of national providers have streamlined their packages to include popular features that went wanting only a few years ago.

While it was hard to find a single service provider offering business users a national calling plan that included roaming and traditional features such as call waiting and caller ID 18 months ago, they are now standard in most plans. Today's plans routinely include features such as unlimited data, international roaming, shared minutes and, by far the most popular, unlimited roaming and long-distance.

The savings are easy to spot. Before the advent of national roaming and long-distance, a trip to a city not covered by a user's plan easily could double his normal bill.

Pooling, or sharing of wireless minutes by an entire company, also has been in demand since service providers started offering it nearly four years ago.

One company that benefits from pooling is Hawaii Home Loans. The Honolulu mortgage company exclusively uses Sprint PCS wireless to meet its voice-service needs.

"Shared minutes is a very integral part of our billing plan," says Leonard Loventhal, senior vice president. "Because we're completely wireless, our usage is high and difficult to predict."

Hawaii Home Loans buys one bucket of minutes that all employees use, which makes costs predictable.

"We know we will not incur per-minute charges. And we've never gone over our minutes," Loventhal says.

While Hawaii Home Loans wireless needs are regional, many service providers, such as Sprint PCS, offer shared-minute national plans that include roaming and long-distance.

Last fall, Sprint PCS launched its new service called Clear Wireless Workplace. Its business plans now also include unlimited PCS-to-PCS calling, voice-command dialing, unlimited data, and nights and weekends minutes.

"Some companies were concerned that they didn't know how the devices were being used when the workday ended. So we added large buckets of anytime minutes and unlimited Vision [data] minutes," says Tom Shaughnessy, director of business marketing at Sprint PCS. There are so many additional minutes and unlimited data usage that managers don't have to be concerned with users incurring charges not included in their plan.

Sprint PCS is one of the only providers offering unlimited data with standard business plans. Its data service lets users surf the Web and check e-mail from their handsets.

Other providers, such as T-Mobile, let business users add data services to their business plan for a set fee.

T-Mobile does not offer a plan with unlimited data, but has two options that could be added to any package. For $3 per month, users can access up to 1M byte of data; $10 per month gets 10M bytes of data.

T-Mobile also offers pooling plans that include roaming, long-distance and unlimited mobile-to-mobile calling. The plans also include set buckets of text-messaging minutes and includes international roaming.

The ability to roam internationally at no additional charge is available to all its business customers. Users would pay a separate fee for all minutes of voice and data usage while traveling overseas, but the service provider has attempted to make those charges more predictable.

"We've tried to simplify our international roaming. We have five tiers of per-minute pricing depending on where users travel," says Todd Leeson, director of business marketing at T-Mobile.

Users also are required to have a handset that supports 900-MHz spectrum, which is the spectrum international GSM providers use.

Wireless packages for business

Here's a glimpse of some plans that let users share minutes.

Carrier	Plan name	Minutes	Roaming	Long-distance	Price	Plan caveats
AT&T Wireless	Pooled Advantage	500	Not included	Not included	$40	Up to 1,000 users
Cingular Wireless	Nation 500*	500	Included	Included	$70	Two-year contract
Nextel	National Shared Plans**	500	Included	Included	$60	Nights and weekends not included.
Sprint PCS	Total Wireless Access	1,250***	Included	Included	$85	$20 per user to share minutes
T-Mobile	National Business Plan	500****	Included	Included	$40	200 of total are anytime minutes.

*Cingular charges $10 per user after the first user for shared minutes.

**Includes unlimited Direct Connect, Nextel's push-to-talk feature.

***Includes unlimited data minutes.

****Includes 300 text messages.

T-Mobile has deployed 802.11b (Wi-Fi) wireless LAN access points throughout the country to offer Internet access at up to 11M bit/sec. It doesn't offer a package with mobile voice and Wi-Fi services, but Leeson says the company eventually will offer an incorporated package.

Cingular Wireless also recently streamlined its business packages and now offers pooled minutes where additional users can be added to business plans for $7 to $50 per month for 1M to 13M bytes of data, respectively. All users are represented on one bill that includes usage for each phone number, which is helpful for departmental chargebacks, says Tim Hogan, executive director of customer communication at the service provider.

Although Cingular has offered pooled minutes for more than a year, it only recently added the feature to its national business plans, Hogan says. Like T-Mobile, Cingular decided not to integrate data pricing to its standard business plans. Instead, Cingular offers the ability to add Web browsing to any plan for $10 per month.

Cingular is the only national provider that includes rollover minutes in its plans. This feature lets users roll over unused voice minutes to the next month. But these minutes expire after 12 months.

The carrier offers international roaming in 108 countries. Cingular users are required to have at least a triband handset to support international roaming because the carrier's network in the U.S. still is based partially on Time Division Multiple Access and GSM.

AT&T Wireless also offers its business customers a multinational calling plan. It recently added WorldView to its business packages, which lets multinational businesses combine all mobile users onto one bill even if they are based, for example, in London, Madrid and Munich. WorldView is not an international roaming offer, but an option that lets Corporate Digital Advantage users receive one bill for all wireless users regardless of location.

Corporate Digital Advantage is designed for companies that spend more than $45,000 annually on wireless services and have 50 or more mobile users.

AT&T Wireless lets users offer corporate pricing to employees who are not on the plan. This gives employees a lower service rate for personal use, and lets the employer apply those dollars spent toward its annual commitment.

And while AT&T Wireless offers business customers a pooled-minutes service option, it does not have a standard offer that includes unlimited long-distance and roaming. AT&T Wireless is one of the few carriers not offering a national pooled-minute plan for businesses.

Nextel, like most of its competitors, offers packages that include national long-distance and roaming, but it has a differentiator as well. Nextel has packages that offer unlimited DirectConnect, its push-to-talk walkie-talkie feature, which is not available from any other provider. By year-end other service providers are likely to add this feature, which requires network and handset upgrades.

Many carriers now include unlimited mobile-to-mobile calling. In most cases the addition of this feature was designed to combat Nextel's push-to-talk offer.

One of the largest national wireless service providers, Verizon Wireless, would not offer pricing or business service package examples for this story. A company spokeswoman says all its business service packages stem from Verizon Wireless' consumer offers and are all customized.

Every other wireless service provider offers custom packages tailored to meet specific user needs in addition to a group of standard plans.

When searching for a service provider, there are five standard criteria that should be considered, says Lisa Pierce, an analyst at Giga Information Group: geographic availability, features, provider stability, depth of relevant expertise, and platform and partners.

Despite pricing and features, users need to ensure a carrier has good coverage in the cities where their offices are located and where its employees often travel.

Pierce also recommends that users view promotional prices that are sometimes advertised as "jumping-off points when negotiating enterprisewide agreements." RFPs should include all a company's requirements and a request for all of a carrier's enterprise contracts.

These contracts will give users a window into each carrier's typical terms and conditions. ■

The Edge

■ SERVICE PROVIDER DEVELOPMENTS
AT THE JUNCTURE BETWEEN THE ENTERPRISE
AND THE NEW PUBLIC NETWORK

Mahi to unwrap 'packet aware' gear

Mi7 designed to take cost out of traditional central offices, interoperate with SONET gear for new services.

■ **BY JIM DUFFY**

ATLANTA — Start-up Mahi Networks this week finally will unwrap the metropolitan core aggregation system it has been developing since being founded four years ago.

Mahi will unveil Mi7 at the Optical Fiber Communication Conference. Mi7 is targeted at incumbent local exchange carriers (ILEC), interexchange carriers (IXC) and national competitive local exchange carriers (CLEC) that need to optimize an embedded base of SONET rings and multivendor transport equipment for metropolitan Ethernet and other data services.

Mahi touts Mi7 as a "packet aware" broadband cross-connect that can eliminate many stand-alone patch panels, add/drop multiplexers and Layer 2 Ethernet switches in carriers' central offices. The result is that a $7 million investment in Mi7 over five years will reap $30 million is operational cost reduction over that same time period, Mahi says.

Mi7 integrates SONET add/drop multiplexing, 3/3 and 3/1 digital cross-connect capabilities, and Layer 2 Ethernet transport and switching into a single bay chassis. The system is designed to aggregate and groom traffic in STS-1 and VT 1.5 increments across multivendor SONET rings, and oversubscribe Ethernet bandwidth to provide high-performance transport services, the company says.

The Mi7 backplane scales from 40G to 320G bit/sec. Transport capabilities range from OC-3 to OC-192 and Gigabit Ethernet. It also offers pluggable interfaces and laser options, such as very short-reach and long-reach optics, which let Mi7 support applications such as intraoffice equipment connection and SONET ring aggregation.

Mahi says the potential market for Mi7 is $1.5 billion to $3 billion — about one to four Mi7s in 3,000 of the 50,000 central offices in the U.S. The system costs $140 million to build over three years.

"Carriers are going to have to improve their interoffice facility transport in order to accommodate new services," says Michael Kennedy, an analyst at Network Strategy Partners. "Mahi is focused on getting the cost out of the standard [public switched telephone network]. It's a tough challenge but it seems like they have the answer. The incumbent vendors are milking what they've got; Mahi's at least a half-generation ahead."

The challenge for Mahi is to win at least a major carrier account that can drive volume for its product, Kennedy says. Mahi officials say they have 10 systems installed in five lab trials with two ILECs, two IXCs and a national CLEC. The company also has service and support agreements with established vendors ADC, Fujitsu and NEC, which could go a long way toward convincing a carrier to do business with it.

Mahi's Mi7 will compete against Lucent's LambdaUnite, Cisco's ONS 15600, Ciena's CoreDirector and Tellabs' Titan 6500. The system costs about $1 million and complies with Network Equipment Building Standards and Operations Systems Modifications for the Integration of Network Elements. ■

PROFILE:
MAHI NETWORKS

Founded:	1999
Headquarters:	Petaluma, Calif.
Funding:	$185 million from St. Paul Venture Capital, Oak Investment Partners, Rho Ventures, Investor Growth Capital and others.
Management:	Christopher Rust, president, CEO and founder; Kevin Pope, executive vice president of engineering and founder.
Employees:	165
Products:	Mi7 Metro Core Aggregation System; Dx7 Electrical Tributary Expansion Shelf; Mission7 element management system; NetOASys network optimization analysis system.
Customers:	ILECs, IXCs and nationwide CLECs.
Fast fact:	Last summer, while other start-ups struggled to attract capital to stay alive during the depths of the telecom depression, Mahi landed an astounding $75 million in new funding.

Short Takes

■ **Bridgewater Systems** has unveiled software that lets carriers centrally monitor and manage wireless LAN services. **Wi-Fi Service Manager** monitors services across thousands of enterprise sites while also controlling secure access to wireless LAN services, Bridgewater says. Wi-Fi Service Manager also provides remote configuration and fault management, integrates with carriers' customer care and billing systems, and extends user administration to companies. Wi-Fi Service Manager is scheduled to be available in the second quarter. Pricing depends on the number of access points managed.

■ **Lumentis** recently unveiled a SONET/synchronous digital hierarchy add/drop multiplexer and terminal that works over coarse wavelength division multiplexing and dense wavelength division multiplexing networks.

MuxFeeder has a line rate of OC-48/STM-16. It provides a logical SONET/SDH point-to-point, bus or ring network with OC-3/STM-1 and OC-12/STM-4 add-drops. Pricing and availability for MuxFeeder was not disclosed.

Start-up Allegro is shutting down

■ **BY JIM DUFFY**

SAN JOSE — The 3-year-old telecom slump has claimed yet another young company. Edge router start-up Allegro Networks is closing its doors after laying off 89% of its staff 10 days ago.

Allegro could not generate revenue or additional funding to keep afloat, says Dave Ginsburg, Allegro vice president of marketing.

Two weeks ago, Allegro had 70 employees. By the end of that week, it was down to eight employees, who are concentrating on selling off assets and intellectual property, Ginsburg says.

Allegro is looking to place groups of engineers and intellectual property in some larger companies, Ginsburg says. The company's operations in India most likely will transfer to another company, he says.

Allegro was founded in January 2000. At its peak, the company employed 185 people, led by CEO David House, former CEO of Bay Networks and president of Nortel.

Allegro was developing a so-called multirouter — several module-sized routers, each with dedicated route processor, memory and a discrete version of the operating system — that fit into a single enclosure.

Multirouters were pitched as a unique way for services providers to offer and purchase managed routing services or lease physically distinct routers. Allegro proposed them as an alternative to virtual routers — several routing domains sharing a single CPU, a single bank of memory, a single software image and a single management plane — for providing such services.

Two major interexchange carriers and a partner in Japan on behalf of a Japanese carrier were testing the multirouter, Ginsburg says. The product was scheduled to be available in the first half of this year.

Allegro attracted more than $89 million since its founding from Bessemer Venture Partners, Columbia Capital, Infinity Capital, Thomas Weisel Venture Partners, Rustic Canyon Group and WK Technology. ■

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BridgeCom adopts Santera gear for voice/data

■ **BY TIM GREENE**

NEW YORK — When regional local carrier BridgeCom wanted to offer data in addition to voice services, it knew it had to look at softswitches rather than traditional local phone switches. After a two-year search, the company decided to buy a SanteraOne voice/data local switch from Santera Systems to support combination voice and data services over a variety of DSL links.

The carrier, which offers services in greater metropolitan New York and in Pennsylvania and Massachusetts, had been reselling voice services of the incumbent local carriers, but two years ago decided it also wanted to offer data, says Brian Crotty, COO of BridgeCom. To do that, the company decided it needed its own infrastructure, he says.

IP phone boom

Use of IP telephony for enhanced business services such as call centers and Web conferences in the U.S. will jump from 828 million minutes in 2003 to 41 billion minutes in 2007.

SOURCE: IDC

That meant sorting through all the vendors of local, or Class 5, switches. But traditional Class 5 switches don't support data.

"We eliminated them out of the gates," Crotty says.

Price was also a factor, Crotty says.

"We had to ask, do we go 30 years into arrears to do this?" he says.

The answer was no, another nail in the coffin for traditional Class 5 switches.

So the company looked to softswitch vendors — Santera and its competitors Lucent, Nortel, Sonus Networks and Telica. But the carrier found that many that listed the Class 5 features BridgeCom wanted on their road maps did not have them in their products.

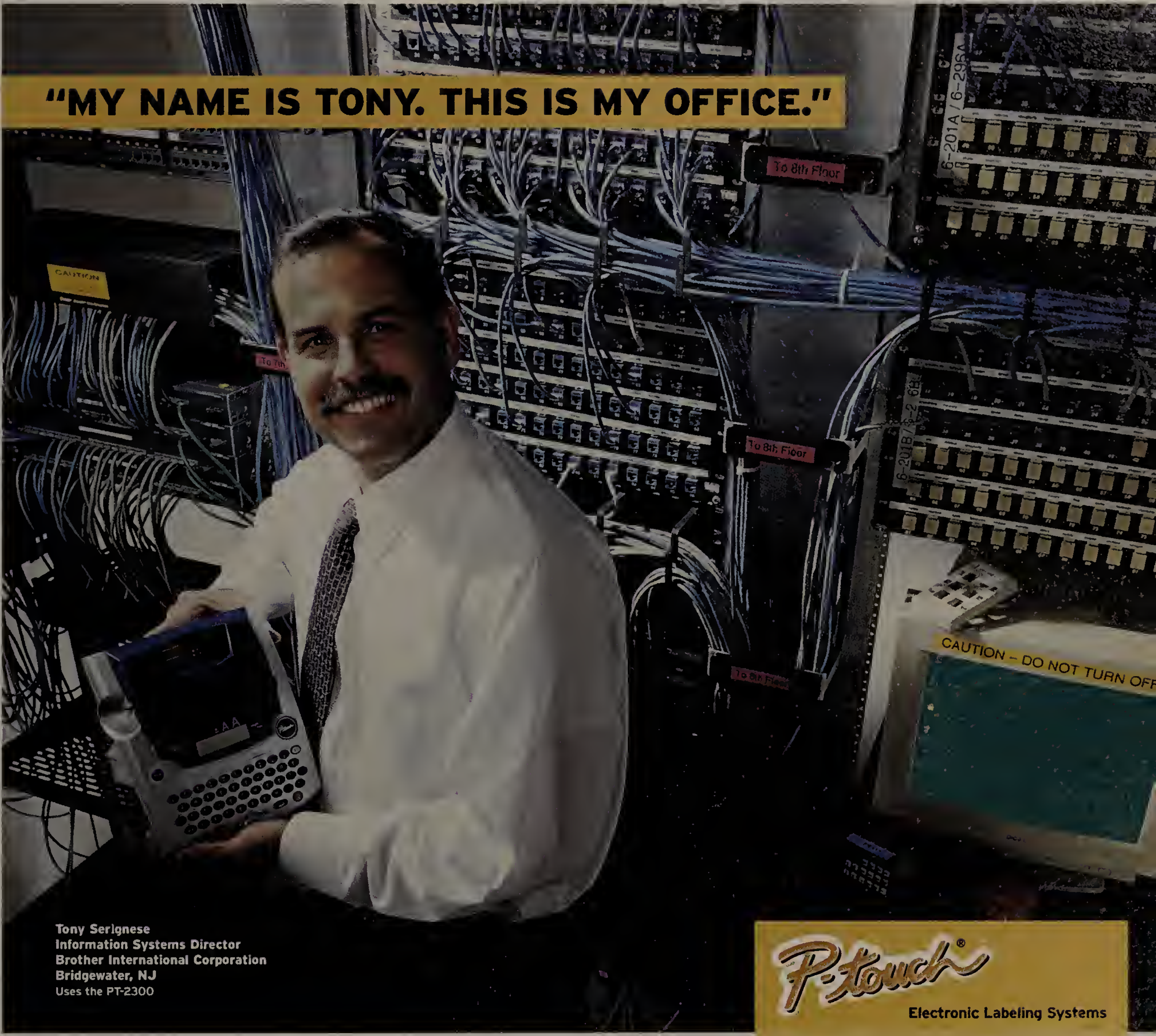
The gear BridgeCom selected had to support single voice lines, Centrex-like services, the main service features of a Class 5 switch such as call waiting and caller ID, plus all aspects of voice over ATM.

BridgeCom says it will continue reselling voice services from other carriers to its customers that don't want data services. With customers served by more than 100 different switching offices, continuing to resell some services keeps the size of BridgeCom's network under control, the carrier says.

In addition to the Santera gear, which it will install at a switching center in Manhattan, the company plans to buy DSL access multiplexers (DSLAM) from Paradyne and offer packet-based voice services over a single pair of copper phone wires. BridgeCom will install Paradyne gear at customer sites and plug phones and data equipment into it. The equipment then multiplexes the voice and data onto the phone wires.

The DSLAMs will feed into SanteraOne, which splits voice traffic from data and trunks it to traditional voice networks or to data networks.

BridgeCom says services based on SanteraOne will be available in August. ■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As a member of the well-known analytical firm IDC, Christine Tenneson is a senior research analyst in the Network Lifecycle Services program. In this position, she provides research, market analysis and consulting on key aspects of the network support and integration and network product support services markets. Specific research areas include competitive analysis and sizing of the markets for network design, consulting, integration, support services, pricing and packaging of these services, and worldwide trends for these services.

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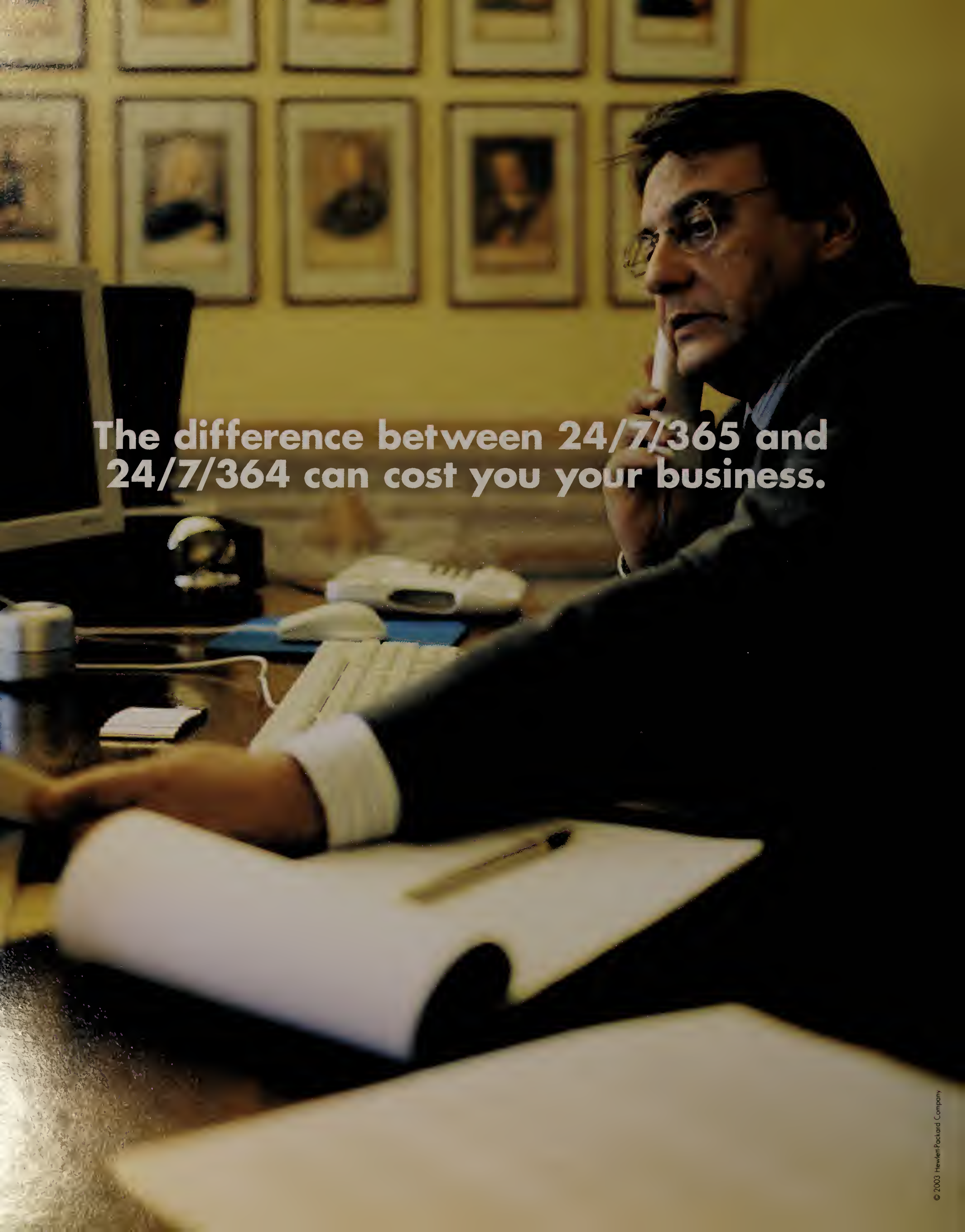
3.24.03

Storage

Storage concerns looming large?

We explore tools, standards and strategies for getting them down to size

An editorial supplement to
NetworkWorld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If your storage network failed, how soon would you notice it? How long would your downtime last? And how long would it take to recover your data?

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Get Off the Backup Treadmill

Sony AIT data storage solutions help companies of any size automate tape backups, delivering real ROI through IT time savings.

Government regulators are requiring organizations from financial to health care to keep copious long-term records. Disaster recovery and business continuity requirements are more stringent than ever, as organizations try to prepare for the worst. And all the while, IT organizations are stretched to the limit, struggling to meet these basic day-to-day demands.

Clearly, it is imperative for any organization to routinely back up valuable data, but it's not imperative that they spend an inordinate number of IT hours doing it. Let's say it takes a single IT administrator 15 minutes to load, unload and check a backup tape, and that person has to deal with just two tapes each day. That's at least 10 hours of IT time per month spent juggling tapes—hours that could be dedicated to more strategic endeavors.

Automated tape systems can get organizations off the backup treadmill. Such systems allow you to consolidate multiple drives into one solution that can be loaded with enough tapes to handle backups for days or weeks. All the required backups and tape rotations are handled on a predefined schedule, without human intervention.

Once a luxury for only large organizations with big budgets and large IT departments, automated tape storage solutions such as those in the Sony Advanced Intelligent Tape™ (AIT) automation family are now cost-effective solutions for small and midsize organizations. Indeed, the fastest growing segment in the tape automation market is for systems with 20 cartridges or less. Even small companies, workgroups or departments with individual Digital Data Storage (DDS) tape backup systems can gain significant business benefits. Larger organizations can leverage the performance, capacity and reliability of a Sony AIT library to enable up to 30 days of unattended backup, boosting cartridge utilization and simplifying management.

Traditionally, many organizations use individual tape drives to back up critical servers, adding additional drives as demand dictates. Consequently, these tape drives are often deployed in a decentralized fashion, requiring that someone physically load fresh tapes into each drive daily or weekly, and to verify that backups complete successfully. With data volume doubling or tripling every year or two, it is difficult to keep up as the number of cartridges grows. Before long, multiple administrators are collectively spending an inordinate amount of time swapping tapes and attending to other mundane chores. This is particularly burdensome in systems with limited tape cartridge capacity.

While such organizations clearly need an automated tape solution, even those with only one tape drive can benefit. Single-drive tape autoloaders and multiple-drive tape libraries are integrated solutions that have space for anywhere from eight to hundreds or even thousands of tapes, along with a mechanism to automatically replace or rotate the tapes on a preset schedule.

When using an automated solution, an administrator loads the tape drives with the appropriate tapes and uses backup software to specify when tapes should be switched, what files should be backed up and how often. Most systems notify the administrator if something is wrong, such as if a tape runs out of space. Otherwise, the administrator simply needs to check the unit at the end of the cycle, be it seven days or 30, and load new tapes. Consider the time savings compared with manually configuring the backup each day, swapping tapes and making sure each backup is complete. Then, consider that the time savings and increase in reliability are even more dramatic when it comes to retrieving data, when time is even more critical.

Sony AIT

Sony's AIT tape drives and libraries were designed from the ground up for automation, with a range of models that allow organizations to centralize their backups and upgrade existing library capacity. For example, Sony's LIB81, the first 1U autoloader in the industry, has one tape drive and capacity for eight cartridges. The flexible range of capacities supplied by Sony AIT-1, AIT-2 and AIT-3 tapes offer enough for a week's worth of backups, with room to spare for a head cleaning cartridge or a copy of a previous week's or month's backup tape. Sony's LIB162 is a larger unit with space for two tape drives and up to 16 individual tapes, all within a 2U rack-mountable design that can fit in a limited space. Its storage capacity of 0.8 terabytes (TB) native and 2.08TB compressed puts it among the leaders in terms of storage density per cubic foot.

In addition to rack-mountable storage systems, Sony has deskside tape libraries that allow users to load up to 15 cartridges in a single removable magazine. This provides enough capacity for two weeks worth of tapes. Sony also offers 30-cartridge units that can provide up to one month or more of hands-free backups.

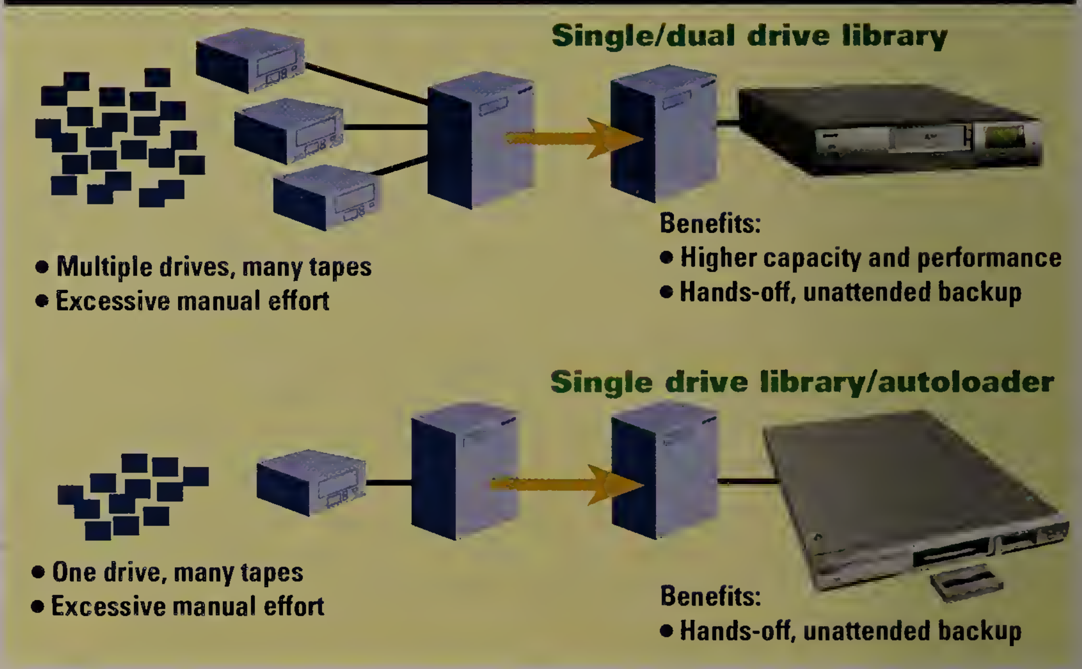
All of Sony's automated tape libraries include a number of important capabilities and characteristics, including:

- **Remote administration:** Sony's tape libraries all have the capability to be controlled and monitored from a remote location.
- **High reliability:** Sony AIT-3 drives are rated at up to 400,000 hours mean time between failure (MTBF) at 100% duty cycle—far exceeding most other types of traditional backup drives.
- **Fast file access:** Sony drives were the first in the industry to include the Memory in Cassette (MIC) feature, which provides 64K-bit flash memory within the tape cartridge to index information and the location of data on the tape. The feature speeds data access and retrieval, making AIT one of the fastest tape formats in terms of data retrieval.
- **Future growth path:** Currently in its third generation, AIT has a defined and proven roadmap that has seen performance and capacity double with each new generation. In addition, all three generations of AIT drives available today are both read and write backward-compatible.
- **Industry support:** AIT drives work with all major operating systems, including Windows, Linux and Unix, as well as with the majority of backup software packages, including Computer Associates' CA BrightStor ARCserve, Veritas Software's Veritas Backup Exec and NetBackup, Legato Systems' NetWorker and IBM's Tivoli Storage Manager.

Sony's AIT automated tape backup solutions are also ideally suited to address the growing need for networked backup. Rather than installing and managing dedicated tape drives or libraries near each server, an organization can consolidate all storage functions and back up data from various servers across the network, further reducing deployment complexity and improving IT productivity.

Whatever the configuration, high-speed, high-capacity AIT tape systems can reduce the pressure on your backup window by cutting down on the time it takes to complete a backup or restore. Automating your daily or weekly backups provides even more benefits—more reliable backups performed without manual intervention, freeing up valuable IT hours that can be spent on projects that contribute to the bottom line.

Progression into Automation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Benefits:
• Higher capacity and performance
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Single drive library/autoloader
• One drive, many tapes
• Excessive manual effort
Benefits:
• Hands-off, unattended backup

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Sony AIT Solutions

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Security toss-up

Securing storage today means using security-imbued management tools or relying on yet unproven storage encryption appliances.

BY ROBERT SCHEIER

SwapDrive CEO David Steinberg chose one of the few storage-specific security products available – a storage encryption appliance from Decru.

WALTER CALAHAN

Network executives face the same challenges securing storage networks as they do enterprise data infrastructures — keeping corporate information safe without slowing application performance or adding management complexity. The problem is, the range of security options isn't nearly as wide for storage as it is for corporate networks.

Storage networks link disk arrays to allow multiple applications (or servers) to access data, and more easily share unused storage than when disk drives attach directly to a server. However, as storage-area networks (SAN) and network-attached storage proliferate, security becomes a real problem. This is especially the case as more customers use IP to link storage devices instead of, or in addition to, the more secure Fibre Channel protocol customarily used in SANs.

"The prevailing perception is that because my [SAN] is behind my firewall it's safe and I don't have to worry about it," says Mark Diamond, president and CEO of Contoural, a Los Altos, Calif., storage education, consulting and incident-management firm. "The problem with that," he adds, "is a SAN has many more entry points" than direct-attached storage.

Relatively few products are designed purely to secure networked storage. This leaves most users relying on the security capabilities found in storage management software from hardware vendors such as Brocade Communications Systems, EMC and McData or in storage-management tools from vendors such as FalconStor Software.

Given this, analysts recommend looking for storage-management tools that support current security standards, such as IP Security (IPSec), Remote Authentication Dial-In User Service (RADIUS) and SNMP Version 3 (SNMPv3), and emerging standards, such as the Diffie-Hellman Key Encryption Protocol-Challenge Handshake Authentication Protocol (DH-CHAP). With IPSec, which the Internet Engineering Task Force mandated be used in certain storage wares in order to be considered standards-compliant, users can add encryption and authentication capabilities into IP storage networks. RADIUS can provide a foundation for role-based security through a central database of user access information, and SNMPv3 supports encryption of management and troubleshooting data from storage devices. DH-CHAP, when it is finalized later this year, will ensure the identity of Fibre Channel storage devices, switches and managers.

Security standards in storage tools

Storage vendors offer a mixed bag when it comes to support for such standards.

McData says it will support third-party implementations of IPSec when it ships its first IP storage products later this year, with native IPSec support coming next year. In its SANtegrity security suite, McData supports RADIUS now and says it will add support for SNMPv3 and DH-CHAP later this year. In the meantime, Brocade's Secure Fabric operating system now supports IPSec and will add support for DH-CHAP, RADIUS and SNMPv3 in the second half of the year. EMC does not support any of these standards in ControlCenter; FalconStor's IPStor software supports IPSec but not RADIUS. Support for SNMPv3 and DH-CHAP will follow as they are finalized, FalconStor says.

Regardless of which security standards they use, most storage-management tool vendors support logical unit number masking, which limits the number of logical storage volumes an application or server can see; and zoning, which organizes the devices on a storage network into logical groups similar to a virtual LAN. Some also support binding, a relatively new technique that uses access control lists to determine which devices can attach to which ports.

While such functions don't secure data, they do prevent storage administrators from configuring their networks improperly. That helps keep storage networks secure, according to the Storage Networking Industry Association (SNIA). In a report released in January, SNIA said the complexity of storage networks makes configuration mistakes the No. 1 security threat for most network storage users.

Encryption appliances

Unencrypted stored data is another big security weakness. At any time, 98% of corporate data is not in transit over a network but at rest on disk or tape devices, says Steve Duplessie, a senior analyst at Enterprise Storage Group. If it isn't encrypted, that data "sits there like a big, fat elephant waiting to be shot," he says.

That reality has turned encryption of data in disk drives or on tape back-up systems into a storage security hot spot. Storage vendors can provide encryption on the server, on the host bus adapters that link the server to the storage network, on the client, or in a stand-alone appliance.

At SwapDrive, an online back-up firm in Washington, D.C., customers were swayed only slightly by assurances from the company that it had great physical security and thorough security policies, says David Steinberg, CEO. To them, he says, the lack of encryption meant "we had a hole in our system."

To fix that "hole," SwapDrive used Decru's DataFort E440 storage security appliance to encrypt customer data as it moves from SwapDrive's servers to a third-party managed storage service environment where it remains encrypted until the customer retrieves it. SwapDrive chose a stand-alone appliance rather than having customers manage their encryption keys and passwords, something it would have needed to do if it downloaded encryption algorithms to client machines. An appliance also minimized any performance hit to the network and applications, Steinberg says.

Stand-alone storage encryption products also help customers split responsibility among groups for managing storage vs. storage security. This division of labor reduces the chance of someone misusing legitimate access rights to steal or sabotage data. It also allows the outsourcing of data management while keeping security in-house, says Andy Salo, director of product marketing at Decru.

Other storage security appliances combine encryption with additional security features. NeoScale Systems' CryptoStor FC provides encryption and centralized policy management, while the CryptoStor for Tape appliance, in beta testing, will do the same for tape systems. And the as-yet-unnamed Vormetric appliance due out in mid-April will combine encryption, authentication and fine-grained access control capabilities, says David Tang, the company's vice president of marketing and business development.

Over time, vendors will incorporate encryption and other such security features into storage switches, tape drives and drive arrays, predicts Mike Alvarado, chair of the SNIA's Storage Security Industry Forum, a group that intends to lobby vendors for improved security in networked storage products. Users ultimately will have a full complement of storage security appliances and integrated security functions from which to choose, says Alvarado, who also is a senior product manager at NeoScale.

But for now, some storage vendors contend that integrated encryption isn't necessary. Paul Ross, director of storage networks for EMC, cites a lack of customer demand as the reason that the vendor doesn't offer encryption.

Some vendors say they hope to fight the storage security threat with authentication protocols and products that verify the identity of a switch, a drive array, a storage manager or anyone else before allowing network access. DH-CHAP, due out this year, will provide such authentication capabilities. DH-CHAP will be a mandatory part of the Fibre Channel Security Protocols under development at the American National Standards Institute. McData recently demonstrated the use of security protocols such as DH-CHAP to authenticate users across its own and other vendors' switches.

While DH-CHAP is aimed at Fibre Channel storage networks, IPSec can provide authentication and encryption capabilities for users building IP storage networks, says Tom Nosella, senior manager of technical marketing with Cisco's Storage Technology Group.

Storage audit

Beyond tools, network storage managers need to develop the same kind of threat assessment and auditing processes they have in place for enterprise data networks, industry experts say. Among other steps, storage managers should consult with their corporate or legal audit staffs to determine what legal or regulatory security requirements they face, Alvarado says (see related story, page 18).

"When people implemented network security, they didn't say 'Let's look at the vulnerabilities and let's protect them,'" Contoural's Diamond says. "People did threat-assessment models, and got a lot of experience [in what worked and what didn't]. A lot of that work hasn't been done for storage security."

Scheier is a freelance writer in Boylston, Mass., who writes about storage and security. He can be reached at rscheier@charter.net.

SECURITY

EMC'S SYMMETRIC AND SECURITY

Every network executive knows hackers use automated "war dialing" software to find modems that will accept an incoming call and, when found, use that connection to launch attacks.

So doesn't the Service Processor that lets EMC Symmetric Storage Systems make and receive service telephone calls pose a security risk?

Not to worry, says Paul Ross, EMC's director of storage networks. "There's only a limited set of things you can do to the Symmetrix through that dial-in connection, and they all have to do with pulling" data about the configuration and functioning of the storage system, he says. If the Service Processor finds a problem with a disk in the system, for example, it can "phone home" to EMC, which will dispatch a technician to replace it. You actually can't get to data such as customer files through the modem connection, he says.

While EMC can send software updates to the Symmetrix through the phone line, Ross says, most companies require an on-site administrator to install those updates or actually reconfigure the system. And for those customers who are still nervous about their phone lines, he says, the Service Processor also can be hooked to the more-protected corporate LAN.

— Robert Scheier

Security starting points

Storage vendors are beefing up their products with security options such as these.

Vendor	Product	Description
Brocade Communications	Secure Fabric OS	Manages Brocade's SilkWorm Fibre Channel switches; includes port-level access control lists to prevent worldwide name spoofing, trusted switches and public-key infrastructure-based authentication.
Cisco	MDS 9000 switches	Support RADIUS for role-based user authentication; virtual SANs, which let administrators isolate ports and switches within a physical SAN to secure access; and SNMPv3, for encryption of management data.
Decru	DataFort E440 and FC440	Encrypts data at rest in storage devices; provides audit trail for tracking access to data.
EMC	ControlCenter management software for SANs	Includes Source ID lockdown, which prevents unauthorized users from spoofing the World Wide Name of a host-bus adapter. Considering support for PKI or smart cards/tokens to improve authentication and access control.
	Celerra for NAS environments	Product architecture prevents storage administrator from viewing data or users from accessing management console. Will support stronger encryption to be included in Network File System Version 4.
FalconStor Software	IPStor storage management software	Requires authentication for storage administrator; supports IPSec and other IP-based security mechanisms; will support DH-CHAP for authentication.
McData	SANtegrity Security Suite	Includes SANtegrity Authentication to provide authentication using DH-CHAP; SANtegrity Binding uses access control lists at the port, switch and fabric levels to secure access to the storage network fabric.
NeoScale Systems	CryptoStor FC for Fibre Channel networks and CryptoStor for Tape (in beta)	Provide encryption and authentication.
Vormetric	Unnamed security appliance scheduled for release in April.	Will combine encryption with authentication and fine-grained access control.

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Disk saves the day (and night)

With backup and retrieval speeds that run 100 times faster than they do for tape, disk is quickly winning favor as the preferred medium for backing up primary storage.

BY DENI CONNOR

'Back up to disk, archive to tape."

That, says Michael Peterson, a senior analyst with Strategic Research, has become the mantra for storage backup.

Disk-based options quickly are replacing tape as the primary means of backing up data, analysts and customers say. Increasing cost parity between tape and disk is one reason, but back-up and retrieval speed is the biggie. Businesses that run 24-7 and rely more on electronic data simply can't afford to suspend operations for the time it takes to deal with tape backups.

At one time, performing nightly backups presented no problem. IT managers could take databases out of operation or make them inactive (putting them into a "quiesced" state) when their companies closed for the night. But as data stores grew, incremental backups became necessary at many companies — time did not permit entire backups nightly. And with the rise of the nonstop business operation over the past few years, no time is right for taking down an application for back-up purposes.

Backing up to disk provides huge relief because it is about 100 times faster than backing up to tape, analysts say.

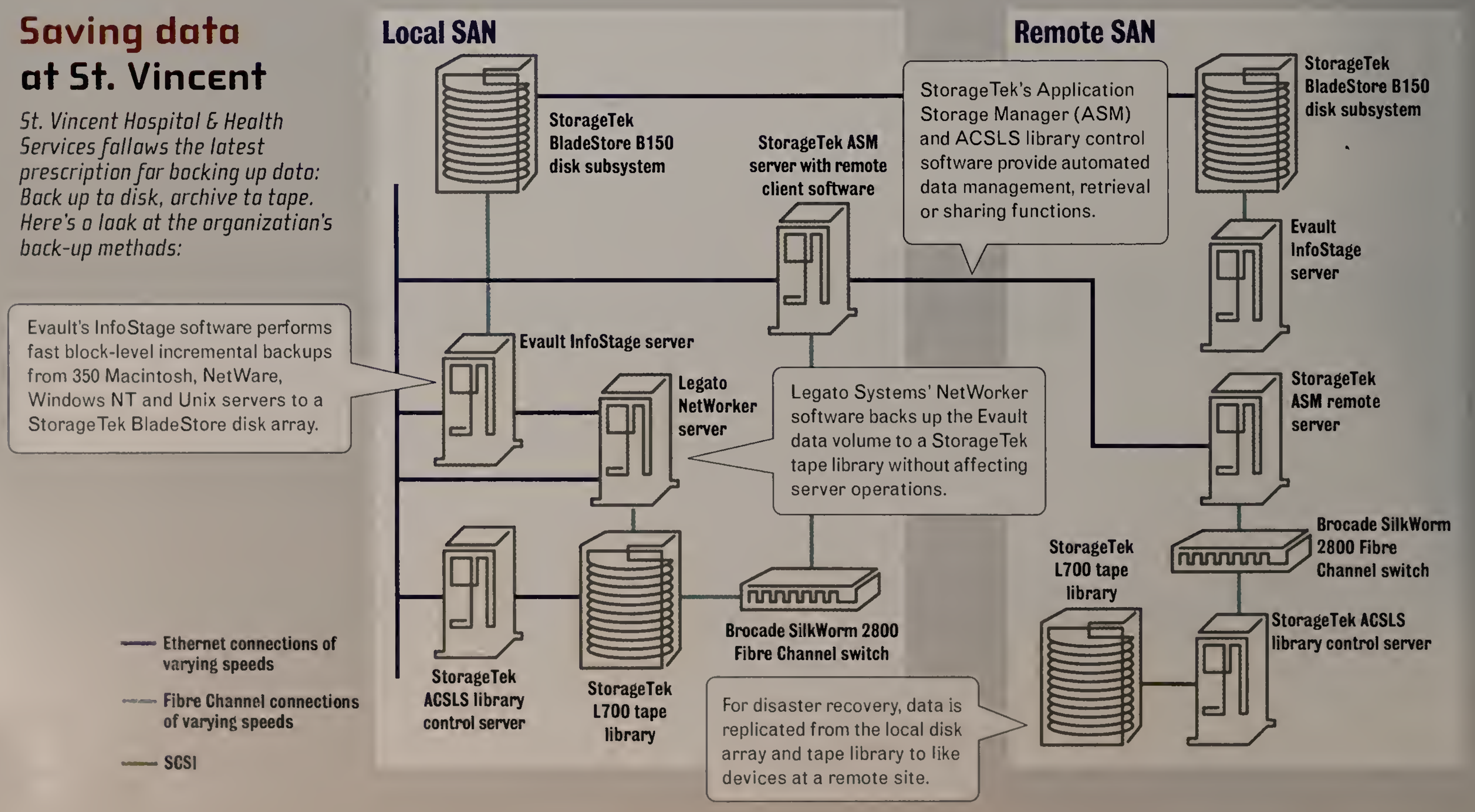
"The average seek time of an Ultra ATA drive is 8.5 milliseconds, transferring data at 100 megabytes per second," says Pete Gerr, an analyst with Enterprise Storage Group. "For a Linear Tape Open tape, you are going to get about 30 megabytes-per-second transfer, and the average seek time is anywhere from 10 to 85 seconds."

Gerr uses a 2G-byte data set as an example. Presuming local tape drives, backing up data would take five hours while restoring the data would take seven hours. It would take all of 30 minutes to back up the data to disk and only 20 minutes

See Backup, page 22

Saving data at St. Vincent

St. Vincent Hospital & Health Services follows the latest prescription for backing up data: Back up to disk, archive to tape. Here's a look at the organization's back-up methods: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Evault InfoStage server
StorageTek ASM remote server
Brocade SilkWorm 2800 Fibre Channel switch
StorageTek L700 tape library
StorageTek ACSLS library control server
Ethernet connections of varying speeds
Fibre Channel connections of varying speeds
SCSI

Evault's InfoStage software performs fast block-level incremental backups from 350 Macintosh, NetWare, Windows NT and Unix servers to a StorageTek BladeStore disk array.

StorageTek's Application Storage Manager (ASM) and ACSLS library control software provide automated data management, retrieval or sharing functions.

Legato Systems' NetWorker software backs up the Evault data volume to a StorageTek tape library without affecting server operations.

For disaster recovery, data is replicated from the local disk array and tape library to like devices at a remote site.

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Continued from page 18

to restore it.

With disk, IT managers also can back up more than one server at a time. With tape, only one server could write at a time.

Although the advantages of tape backup over disk are decreasing, users say they aren't throwing out their tape drives and libraries or forcing them into disuse. Rather, they are using tape to double protect and archive their data. Some users are even replicating their data to remote sites as a sort of triple whammy of data protection.

Here's a look at how three corporate storage managers are approaching backup today.

Always available

In March 2002, Scott Mastre, server engineer at Wells Fargo Trust Operations in Minneapolis, was in a predicament. He was running out of time — not to mention getting short on patience — because he needed to back up transaction logs from as many as 40 SQL Server and Oracle databases on Windows 2000 servers every day.

Because he was using tape to store each of the transaction logs, only one server could do its back-up at a time. And in many cases, he needed to take down databases so he could back up the transaction logs.

Disk back-up options

A variety of vendors offer hardware storage devices that use inexpensive ATA drives, allowing users to adopt disk-based backup in lieu of slower tape options.

Vendor	Product	Maximum capacity (in terabytes)
ATTO Technology	Diamond Series RAID Storage Array	3.8
EMC	Centera	160
Network Appliance	NearStor R100	96
Quantum	DX30	3
StorageTek	BladeStore Disk Subsystem	160

"We could only back up nightly when we shut down the databases," Mastre says. It took Mastre about two hours to back up transaction log by transaction log for those 40 databases. Mastre figured switching to disk would not only save him time, but also keep the databases constantly available.

He chose Xiotech's Magnitude storage arrays for local and remote data storage, CommVault Systems' Galaxy back-up software and St. Bernard Software's Open File Manager data-protection software. Open File Manager lets the Galaxy software capture files that are open and in use during the back-up process. This means data is backed up completely and uncorrupted even though the databases remain in use.

"Those backups are all 'hot' in that the databases are still online while the backup takes place," Mastre says, noting that the main targets for open file management were the Windows file servers. "There we have a combination of user files and data from older legacy applications. And typically we have problems getting users to log off at night, so we weren't usually in a state where we could back up the files."

Now at any given hour, Mastre says, as many as 40 [illegible] are streaming transaction logs to disk without interrupting operations. This can be compared with the [illegible] hours nightly he had to quiesce databases during the tape back-up process.

Using the CommVault software, Mastre backs up the databases to the disk-based storage array for speed and concurrency. Once the data is on disk, he generates copies from the storage array to tape for off-site storage. "We perform hourly transaction log backups and then daily full backups," he says.

When users inadvertently erase files, Mastre can get them back faster from disk than he could from tape. "Previously, because we didn't keep tapes on-site, it could take a day to get the data back, and more time to restore it," he says. "Now with disk, retrieval is immediate."

The edge of the platter

For Rich Banta, senior enterprise systems engineer at St. Vincent Hospital & Health Services in Indianapolis, the day was 12 hours too short. Backing up the 6 terabytes of data on the 926-bed medical center's 350 servers tape took 36 hours, making nightly backups impossible. Tape backups simply wouldn't work any longer, especially because Banta expects to add another 100 servers this year as St. Vincent's grows through acquisition and normal business operations.

"We did some research, and I've seen some successful disk-to-disk-to-tape implementations on a smaller scale, so we thought the technology and products had finally matured," Banta says.

Plus with ATA disks, those commonly used with desktop computers, now costing less than a penny per megabyte, Banta says "we were finally able to make the sale to management." Comparatively, SCSI costs 3 to 5 cents per megabyte and Fibre Channel 7 to 15 cents per megabyte, according to Giga Information Group.

Most of the medical center servers run Windows NT and NetWare, but Banta also has some on Macintosh and Unix operating systems. He is backing up data generated from McKesson DICOM and ALI UltraPACS digital imaging systems. PACS is the term for picture archiving and communications systems used in diagnostic imaging in healthcare.

Banta supplemented his StorageTek L700 ACSLS tape library with a disk-based system that, according to vendor claims, is faster than tape. To that he added software from Evault called InfoStage, which performs block-level incremental backups of all 350-host computers to a StorageTek BladeStore Disk Subsystem. BladeStore uses ATA drives.

"What really makes this work, more than cheap ATA disk, is the block-level nature of Evault's InfoStage, which works with NetWare, Windows NT and Macintoshes, as well as Solaris and AIX," he says.

Once data is on disk, Banta can back it up to tape using Legato Systems' NetWorker software at his leisure and without affecting server operations. Then, using StorageTek's Application Storage Manager software, he makes asynchronous copies of the backups that he sends over an OC-3 line to a BladeStore subsystem 14 miles away. Banta eventually will upgrade the OC-3 to fiber to allow off-site mirroring.

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Disk has saved his staff not just time, but money, Banta says. "We could have added another 100 servers into our back-up world without spending a ton of money. But we saved $1.1 million [going to disk instead]. That covers our disaster-recovery costs," he says.

"We were in terrible pain before — and pain's a great motivator," Banta says.

Another triple whammy

Jeff Polsgrove, CIO for Scottrade, a financial firm in St. Louis, has about 8 terabytes of historical trading data he restores from tape to disk so he can get to it faster. He moves the data to an EMC Centera "content-addressable" storage system, which uses ATA drives, Windows 2000 servers and EMC Symmetrix arrays. Content-addressable storage is used for data that doesn't change over time.

The need to comply with U.S. Securities and Exchange Commission regulations on keeping electronic financial records "readily available" spurs Polsgrove's tape-to-disk transfer. Accessing data stored in tape drives was too cumbersome, he says.

"When we wanted to reconstruct a transaction going back a number of years from tape, we had to search tape by tape for an account number and then restore the data we needed," he says. "And, because there was no index attached to a [tape-based] record, retrieval wasn't something the customer could do themselves. IS had to do it.

"With disk, we can get to data hundreds of times faster than having to sort through tapes, dump the data somewhere, mount another tape and go through the process again," Polsgrove says.

"And, the new way gives the data back to the customer," he adds.

Each night, Polsgrove backs up data from one disk to another, then dumps the data from the second storage array to tape. "We are using disk as a staging area because speed is of the essence. For disaster-recovery purposes, we need to send the data to tape and then off-site," he says.

"Back up to disk, archive to tape." The mantra grows ever stronger. ■

A Network World editorial supplement

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Enhancing Backup Strategies for Mission-Critical Information

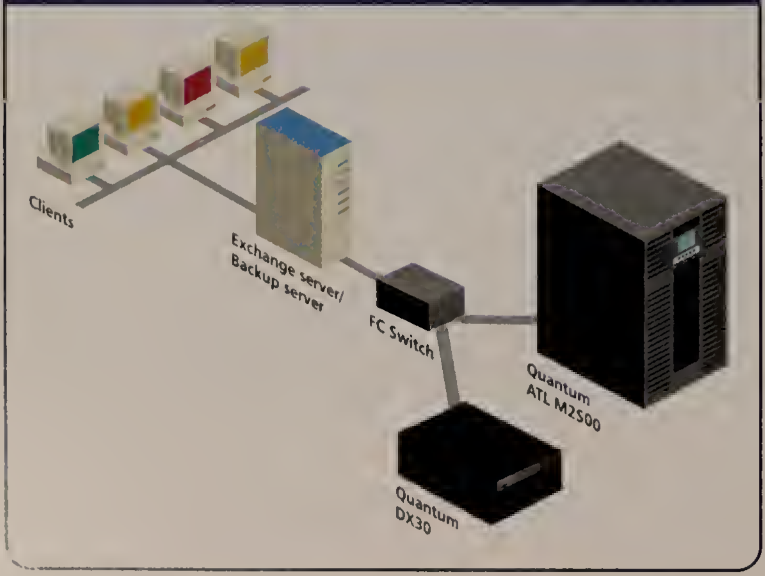
Quantum's DX30 solves backup and recovery bottlenecks with a disk-based solution that emulates a tape library.

There is no alternative: When it comes to business success, corporations must have easy access to vital information, and they must have it immediately.

"IT management has been tasked to ensure that data is accessible 24 hours a day, 7 days a week," says Dave Kenyon, product line manager for Enhanced Backup at Quantum, a leading provider of storage solutions based in Milpitas, Calif. "When shrinking backup windows are compounded with increased backup and restore requirements, IT managers are forced to concentrate on the backup process and put other critical IT projects on-hold."

Clearly, the pressure is on for IS managers to provide timely, reliable backup and recovery services to ensure that business leaders can obtain vital information any time, anywhere. But just as corporate demands for data accessibility have risen to an all-time high, so too has the difficulty of quickly and reliably backing up that data. IS managers must grapple with the tough reality of backing up exponentially increasing amounts of company data in a steadily shrinking window of time, says Steve Kenniston, an analyst at Enterprise Storage Group, an independent research firm based in Milford, Mass.

Separation of Backup and Archive Targets



"As companies become more global and people all over the world need to access data, there is no time during the night when nobody is trying to access information," he points out. Meanwhile, many companies report that their volume of stored data is growing at an annual rate of 40 percent to 75 percent.

This leaves data center folks between a rock and a hard place: Tape libraries can be just too slow to reliably back up data in the little time available. Moreover, it can take days to recover data that's stored on tape—days that many companies don't have.

But the CEO doesn't want to hear about how long it takes to back up data, reports Shane Jackson, Quantum's director of business development. "He just wants to know why his employees can't get at the data when they need to," says Jackson. "As a result, system administrators are in the hot seat—if they can't recover the data when they need to, it could mean their job, and if they take too long backing it up, it could mean the same thing."

> ***"As companies become more global and people all over the world need to access data, there is no time during the night when nobody is trying to access information."***
>
> — Steve Kenniston,
> Analyst, Enterprise Storage Group

The Answer: Implement an Enhanced Backup Strategy

Many experts advise companies faced with this intractable problem to enhance traditional tape-based backup technology with disk subsystems. For example, the Quantum DX30 disk-based backup system can address these critical problems by offering vastly increased backup and recovery speeds, better reliability and hassle-free implementation. "By storing mission-critical data on the DX30, IS employees can rest comfortably knowing that they can restore data rapidly and reliably, reducing downtime for business users," says Kenyon. The DX30 brings the following strengths to the data center:

- **Speed.** Rather than writing at the speed of tape, the DX30 runs at an 80 MB per second clip, which can cut backup and recovery time drastically. That translates into businesses not having to wait to access important data.

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and consultation from Quantum. Visit us at www.quantum.c

- **Reliability**. The DX30's hot-swappable disk drives further enhance its reliability. "If you have a tape drive fail, you might have a major interruption in your backup job; with a disk-based system the failure of one drive won't prevent you from completing a backup," says Jackson.
- **Ease of integration.** Implementing disk-based systems in a traditional tape environment can present significant integration challenges. Many industry experts point to the DX30 as a smart solution, because the system emulates the traditional automated tape library. The result? There's no need for a so-called "forklift upgrade," and companies don't waste the significant investments they've already made into tape libraries. "Because of Quantum's emulation approach, this is easy to use for a guy who already knows how to back up to tape," says Jackson. "The way you back up to a DX30 will be exactly the same."

In addition, tape management software from a host of vendors—such as Legato, Atempo and VERITAS Software—work perfectly with the DX30. Don Peterson, a senior product manager at VERITAS, says the DX30 is a system administrator's dream. "The Quantum DX30 provides a disk-based backup solution that operates seamlessly with existing tape backup software, such as VERITAS NetBackup," he says. "The DX30 simulates a tape library, so the administrator isn't required to learn a new backup paradigm, and it eliminates problems associated with tape media."

As companies rely ever more heavily on technology to conduct business, access to online information will only increase in importance. That's why smart IS managers will implement an enhanced backup strategy. After all, by supporting the needs of business users, they support the success of the business itself.

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Building a Rock Solid Storage Strategy

Database File Tech's reputation as 'The Fort Knox' of data storage rests securely on the DX30.

For Bob Gignac, director of business development at Database File Tech, buying the DX30 meant faster, more reliable data backup and recovery.

The folks at Database File Tech (DBFT) understand the importance of corporate data. In their business, they have to. The Victoria, British Columbia-based organization has built a sterling reputation for safekeeping the electronic assets of myriad government agencies and corporations. The company's bunker-like vault of a building is anchored to a mile-wide plug of solid rock, able to withstand a 9.5 earthquake on the Richter scale. So when it came time to purchase disk-based backup for their company, small wonder the executives chose the speed and reliability of Quantum's DX30.

"People's data is our livelihood here," says Bob Gignac, the director of business development at DBFT. "We understand that corporate data is critical to corporations worldwide and that they need to be able to restore their data quickly in the event of a technical outage."

That need for speed led DBFT to search for a disk-based backup system in the summer of 2002. It was becoming obvious that the tape-based storage systems from Quantum's competitors couldn't keep up with the demands of the growing company. "Fast recovery is very important to our clients," says Gignac. "If they have a hard-drive crash, they need to be up and running in hours, not days. Their businesses demand it." Gignac and Maurice Auger, director of operations at DBFT, began reviewing the company's backup capabilities to look for a reliable alternative that would allow faster restoration of client data. They looked at disk-based products from companies such as EMC, Network Appliance and IBM. While fast and scalable, these products were not simple to install in conjunction with the tape library already in use at DBFT. Their integration and management challenges caused Gignac and Auger to keep shopping. Finally, Atempo, DBFT's storage management software provider, suggested that Gignac take a look at the DX30 from Quantum. It was fast, scalable and didn't pose the integration challenges inherent in many disk-based storage subsystems. DBFT signed up for Quantum's trial program for the DX30 and was immediately hooked. "It tested at 280 gigabytes per hour," Gignac says, and the fact that it works seamlessly with Atempo's Time Navigator meant that there was no integration problem at all—the software recognized the DX30 the minute it was plugged in.

As for reliability, Gignac says, "It's a joy. We tested the DX30 for about five months and it had no problems at all. Best of all, there are no worries about tapes deteriorating or ripping, or somebody having to change out tapes. That factor isn't even entered into the equation."

Best of all, DBFT clients, who access their data via the Internet, "have near instant access to their data," says Gignac. "They don't have to wait for a tape to be loaded."

The management team at DBFT is so bullish on the DX30 that they plan to use it extensively at the new remote mirrored facility under construction in Prince George at the University of Northern British Columbia's Research and Development Park. The new site will be equipped with another DX30 for its SANs. "It's enabling us to branch out," says Gignac. "Prior to implementing the DX30, our market was primarily Victoria, B.C., due to the physical nature of tape, as well as its transport and archival requirements. With the DX30, there are no geographical limits to our service."

In fact, Gignac says he can't see the end of the demand for DX30s at his company. "When you have clients with terabytes of data that they need stored, restored and protected, the DX30 is not only a good solution for our clients, it's good business for us."

Painless provisioning

New rules-based software takes the sting out of storage resource management.

BY BOB VIOLINO

Storage is not to be left out of the automation wave sweeping through corporate networks.

One of the hottest developments in storage resource management is automated provisioning — software for easing the resource allocation process.

Storage provisioning is known as a time-consuming, repetitive and error-prone process. When additional storage is needed for an application, a storage administrator must determine the exact type and quality of storage required by the particular application, locate that type of storage within a storage-area network (SAN), and identify an appropriate path or paths between the storage device and the application. Adding storage to a high-end array can take as many as 42 steps, each requiring analysis and testing, experts say. Fixing errors can be time-consuming and can result in data loss.

"Provisioning is one of the more painstaking tasks that does not have a huge amount of value," says Nancy Marrone, an analyst at Enterprise Storage Group. "It can be a three- to four-day process, and sometimes takes up to three weeks — time that could be spent on more important tasks."

She says the exercise can be so exasperating that people often request more storage than is needed to avoid going through the provisioning process again right way. "You end up with an extremely inefficient use of existing resources," Marrone says.

By using automated software, you can streamline the process, saving time, reducing the over-provisioning of storage and cutting down on errors, Marrone says. Automated provisioning ensures that systems and applications get the correct type of storage by relying on preset rules for allocation, she says. IT man-

See Provisioning, page 16

Automated provisioning software sent IT staff productivity soaring at UAL Loyalty Services, says Gary Pilafas, senior storage architect.

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Continued from page 14

agers set the rules based on service levels, the value of the data and the needs of specific business applications.

Early users of automated provisioning report good results. "We've been able to do additional work that we didn't have time for before because the provisioning process was so manual," says Gary Pilafas, senior storage and systems architect for UAL Loyalty Services, a Web-based division of UAL Corp., which uses automated provisioning software from CreekPath Systems.

A market taking off

Analysts expect big market growth, especially as IT managers look to reallocate thin labor resources — by slashing the time it takes to provision — and to maintain a higher level of storage management accuracy. In a recent report, Enterprise Storage Group predicted worldwide sales of automated provisioning products would increase to $105 million this year from less than $30 million in 2002, and then double from 2003 to 2004.

Storage provisioning software, available from most major storage players since last year, can cost $100,000 to more than $250,000, depending on the size of the corporation. Early adopters say the price is worth the benefits.

UAL Loyalty, which runs UAL's portal for e-commerce and other Internet functions, looked into storage resource management, including automated provisioning, when its storage requirements increased significantly with the development of new Web sites and online service offerings.

> "Provisioning is one of the more painstaking tasks that does not have a huge amount of value. It can be a three- to four-day process, and sometimes takes up to three weeks."
>
> **Nancy Marrone**
> Analyst, Enterprise Storage Group

The company has three SANs, with storage systems from multiple vendors, for dealing with huge volumes of data. Managing these storage resources efficiently with a minimal IT staff was imperative, Pilafas says. "We have a small team to begin with, and we're trying to do more work with the same number of people," he says.

In October 2002, UAL Loyalty began using CreekPath's AIM Suite 2.5 storage resource management software with automated provisioning capability. Since then, the division has slashed provisioning time from one week to a matter of hours — and IT staffers now have more time to develop Web-based business opportunities for the airline, Pilafas says.

UAL Loyalty spent $300,000 for the suite, including installation, system configuration and training, Pilafas says. The return on investment for the software will come partly from the additional revenue from new Web ventures and from having more efficient storage management and less system downtime during provisioning, he adds.

But the real selling point for automated provisioning was the savings in labor costs, Pilafas says. "We went into senior management with an if-then proposition," he says. "We said, 'If we don't buy this software, then we'll need to add headcount.' We probably would have needed at least two more people for storage management."

Other IT and storage managers are taking a wait-and-see approach to automated provisioning.

Steve Pomposi, head of storage management at insurer Aetna, in Hartford, Conn., says he is holding off on automated provisioning until the technology matures. "We need the ability to provision storage across heterogeneous servers and storage devices," Pomposi says, noting that he is following work on standards meant to ease multivendor provisioning. (see related story at www.nwfusion.com; DocFinder: 4821).

Getting what you need

Automated solutions are only as good as the policies and processes companies put in place for allocating storage. Obviously, the more sophisticated the storage infrastructure, the tougher the job.

Enterprise Storage Group's Marrone cautions that not all provisioning software lets users allocate storage for individual applications or files. "Although everyone says they look at storage provisioning from an application perspective, only a few companies give you insight into how an application is using storage," she says. "And if you can get down to the file level, then you can make storage decisions based on file type. We see that happening as the need for storage resource management increases."

Managers also have to get comfortable letting software run formerly manual processes, Marrone adds.

That's an issue for Malcolm Fields, CIO at office furniture manufacturer Hon Industries, in Muscatine, Iowa. While Fields says he likes the idea, he doesn't think provisioning software is mature enough.

"We're not comfortable with taking something that used to be performed by someone who is analytical and intelligent and putting it into a piece of software," he says.

Violino is a freelance writer covering business and technology. He can be reached at bviolino@optonline.net.

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Read up on standards efforts for heterogeneous storage provisioning, plus view a list of storage provisioning wares.

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Storing by the rules

Complying with regulations governing data storage and retrieval could put you on the hot seat. Here's how to stay cool.

BY DENI CONNOR

The Department of Health and Human Services, Federal Reserve Board, Food and Drug Administration, Internal Revenue Service, Joint Commissions on Accreditation of Healthcare Organizations, National Association of Securities Dealers, Securities and Exchange Commission …

The list goes on of regulatory agencies with laws affecting nearly every bit of information stored on corporate networks. Although many of the regulations have been in place for years, such as the SEC's Rule 17a-3 and 4, enforcement of some is only now being taken seriously. The SEC has shaken corporate executives out of their complacency in its dealings with Enron, WorldCom and others under the government agency's scrutiny for financial malfeasance, imposing fines on brokerages for not keeping e-mail messages, for example.

The Sarbanes-Oxley Act of 2002, too, has been a wake-up call. Pushed through Congress and signed into law in response to last year's billion-dollar accounting scandals and bankruptcies, the act requires that managers vouch for the internal controls their companies place over areas that include transactions, electronic information and communications. Sarbanes-Oxley will become an SEC rule.

Preventing a storage crisis while complying with federal healthcare regulations requires much thought, but some guesswork too, says Mark Moroses, senior director of technical services and security officer at Maimonides Medical Center.

CATRINA GENOVESE

Clearly, protecting paper records is not enough. All data — paper, film-based and electronic — needs to be stored, protected and readily available should a government agency request it. Even everyday tax laws effect data storage, notes Tom Hughes, senior adviser for strategic planning at The George Washington University, in Washington, D.C.

"We store our financial records as images on [write-once, read many] drives," Hughes says. "Once the image is burned on the WORM disk, it is there forever. That's one of the requirements of a proposed IRS regulation."

Hughes and other IT executives are in the hot seat. They need to provide the storage tools and systems that will let their companies archive and protect records in conformance with rules and regulations. It's not a good place to be, industry watchers say.

"There is a lot of misunderstanding and ambiguity in the regulations as to how to implement storage systems," says Peter Gerr, an analyst at Enterprise Storage Group.

The regulations rarely spell out specific implementations or give any guidance other than the number of years data must be kept. IT managers are left figuring out how to meet mandates for electronic records, and to work with vendors who may have a limited understanding of the rules.

Rules for financial firms

Perhaps the most detailed rule for electronic records archiving is SEC Rule 17a-3 and 4, part of the Securities Exchange Act of 1934, revised in 1998 and then again in September 2002. Rule 17a-3 and 4 says brokerages, dealers and transfer agents must preserve electronic data generated from the time of the 1998 revision on nonrewritable, nonerasable media (WORM drives) for a period of not less than six years. Companies must keep logs of when the data is accessed and modified. These logs must show that the data, including that contained in e-mail and instant messages, has not been altered or deleted. Data relating to a particular transaction must be capable of being retrieved quickly for a period of two years from whatever media it is stored on, so a complete record of the transaction can be readily available should the SEC ask for it.

Companies didn't immediately implement compliant systems, mostly because of a lack of software that allowed compliance.

"When the [SEC] rule came out, those of us in the industry threw up our hands in exasperation. We had

See Rules, page 10

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The Cisco ONS 15530 helps enterprises build cost-effective, resilient networks by providing multiservice aggregation over an optical core.

Imagine you've got a large data center full of mainframes and storage devices, with maybe 32 Fibre Channel or FICON channels leading to various storage systems. You need to implement some form of disaster recovery for all that storage, and you decide that the perfect solution is to back it up to a small data center in a building your company owns across town.

You've already got access to fiber between the primary and backup data centers, so you figure there should be no problem. That is, until you discover it may take a full fiber pair to support each Fibre Channel or FICON channel. That's when reality hits: you don't have access to that much fiber.

As this sort of storage-area network dilemma plays out in enterprises around the country and around the world, organizations are finding that metro optical networks can ease their bandwidth crunch. The use of Dense Wave Division Multiplexing (DWDM) technology on devices such as the Cisco ONS 15530 enables companies to get far more capacity out of existing fiber. DWDM can also help enterprises justify the deployment of new fiber by dramatically increasing the number of services that fiber can support, extending its usable life and growth capacity.

The Cisco ONS 15530, one of the newest members of the Cisco Complete Optical Multi-service Edge and Transport (COMET) portfolio, is a DWDM multiservice aggregation platform. With a new eight-port Fiber Channel/Gigabit Ethernet aggregation card, the Cisco ONS 15530 can dramatically lower the cost of carrying Fibre Channel or FICON data by aggregating up to eight channels across a single optical wavelength, for a total of 256 channels per fiber pair. Using the new 2.5 Gbps DWDM trunk card, the ONS 15530 can also support flexible, low-density network designs that require the ability to add/drop services around a metro ring, such as two Fibre Channel or FICON channels or 10 ESCON channels.

Storage and more

"Storage often drives deployment of metro DWDM networks," says Mike Noto, ONS 15530 product manager with Cisco Systems. With that in mind, the Cisco ONS 15500 platforms have been qualified by storage vendors such as IBM, EMC, HP/Compaq and Hitachi Data Systems for use in their respective storage environments.

But storage is only part of the story. "Storage takes only a few optical channels," Noto says. "Several are left for other applications."

The Cisco ONS 15530 is also able to combine multiple Gigabit Ethernet connections per wavelength. That will enable enterprise customers and service providers to aggregate Gigabit Ethernet connections over a 10G DWDM metro backbone, simplifying the deployment of Ethernet across the MAN by eliminating the need for protocol conversion and rate adaptation.

Protocols including SONET/SDH are also supported, enabling the Cisco ONS 15530 to handle virtually any mix of enterprise storage, data, voice and video networking requirements. And the ONS 15530 shares the same Cisco IOS roots as other Cisco switch and router products, which means users will instantly recognize its familiar command line interface.

Cisco IOS support also means the Cisco ONS 15530 fits seamlessly into the Cisco Architecture for Voice, Video and Integrated Data (AVVID) framework, enabling it to provide an optical foundation for the intelligent IP applications supported by Cisco AVVID. Those applications range from security features such as authorization, authentication and accounting to load balancing and advanced quality of service (QoS) capabilities.

Optical economics

Scalability is another important attribute of the Cisco ONS 15530, as the system is built to grow with customer needs. Each Cisco ONS 15530 supports four protected or eight unprotected optical wavelengths; eight ONS 15530s can be integrated to support 32 wavelengths. Customers can start with wavelengths that carry 2.5Gbps of traffic and have the flexibility to add additional wavelengths with a capacity of up to 10Gbps each to support high bandwidth applications and to allow for future growth.

One of the newest members of the Cisco COMET portfolio is the Cisco ONS 15530, a DWDM multiservice aggregation platform that enables customers to get the most out of their expensive fiber, lowering capital expenses and operating costs.

"That kind of capacity brings a two-fold benefit," Noto says. For one, customers can now use a single optical wavelength to support multiple services, enabling them to get the most out of their expensive fiber. Secondly, customers need less equipment to support the same number of applications, which lowers capital expenses as well as operating costs.

The Cisco ONS 15530 is flexible enough to fill a variety of roles in differing network topologies. Enterprises can use the ONS 15530 in metro-area point-to-point or ring networks to provide campus connectivity, data center backup, storage-area networking or disaster recovery applications. The ONS 15530 can also work with other Cisco COMET products, providing high-density traffic aggregation to the larger Cisco ONS 15540, for example. It can be combined with the ONS 15540 or the Cisco ONS 15454 to support any combination of storage, data and SONET/SDH services. Service providers can likewise use the Cisco ONS 15530 to offer managed wavelength services to their enterprise customers, augmenting or providing an alternative to private fiber networks.

Like all Cisco networking products, the Cisco ONS 15530 is highly resilient. Cisco offers multiple signal protection schemes, including a new Protection Switch Module (PSM) that provides fiber trunk protection in a point-to-point metro DWDM network. With the PSM, a DWDM signal carrying Fibre Channel connections from a storage device and Gigabit Ethernet streams from a router can be used to protect against a fiber cut by optically splitting these signals into two diverse paths. Like the rest of the Cisco COMET portfolio, the ONS 15530 can also route around failed network links in less than 50ms.

Other high availability options include redundant line cards, optical filters, power supplies and processor/switch fabrics, with the ability to switch to a backup in less than 50ms. With such capabilities employed, the Cisco ONS 15530 can provide the high availability required for mission critical networks.

Such features are critical for enterprise networks to remain resilient. As Gartner, Inc.'s Diane Tunick Morello wrote in her company's recent report, The Blueprint for the Resilient Virtual Organization, "An infrastructure designed for resilience is the foundation for business continuity and agility."

Learn more about the Cisco ONS 15530

Download the Data Sheet, "Cisco ONS 15530 Multiservice Aggregation Platform," from: www.nwfusionpartners.com/cisco/pdf/15530_DS.pdf

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Continued from page 8

no technological source to turn to other than internally conceived ways to review, capture and preserve e-mails," says Ravi Jethmal, vice president of compliance for Abel/Noser, a New York brokerage.

Admitting his own frustration, Jethmal says, "I had a very hard time finding solutions. A Pandora's box opened up — three different types of vendors came running at me with their various products, two of which didn't work."

Subject to interpretation

Jethmal says he reviewed the SEC regulations and evaluated software and hardware aimed at solving his e-mail archiving problem before choosing Legato System's EmailXtender and EmailXaminer software. Should Abel/Noser be faced with an SEC audit, Jethmal says this software would let him retrieve electronic documents and e-mails involved with any trading transaction by entering an account number. The software keeps an ongoing log showing when data is accessed, by whom, and what is done to it.

While Rule 17a-3 and 4 is clear on some points, such as use of nonrewritable, nonerasable media for e-mail archiving, it is far less precise on other aspects, Jethmal says. "Don't ask me what the term 'readily available' means — it's an SEC term you'd have to go to Washington to get a definition of," he quips.

Jethmal has interpreted "readily available" to mean having two years worth of data online and immediately retrievable. He stores messaging data on optical disks that can neither be erased nor altered.

Jeff Polsgrove, CIO for Scottrade, a financial firm in St. Louis, is experiencing the same frustration with the financial rules. Regulations require an IT system that can store years of historical financial data.

"Because of the volume of data we manage, I have to load up a bunch of tapes to find a file and start manually searching," Polsgrove says. "Maintaining deep archives [of information] means I keep tape after tape of records. If the tapes are sent off-site as companies normally do, we need to get them back before we can find a record." Manually reconstructing a transaction from tape and paper-based records could take days, Polsgrove says.

Polsgrove has settled on EMC's Centera storage system. Individual records are linked by searchable metadata and stored on inexpensive disks (local ATA drives). Centera, combined with document and records-archiving software, builds indexes for each transaction so they can be easily retrieved, thus satisfying SEC and NASD rules regarding data retention. Polsgrove ensures integrity by backing up the data to tape and replicating it off-site.

Scratchy medical prescriptions

When it comes to regulating medical data, rules are even sketchier than they are for financial firms, says Mark Moroses, senior director of technical services and security officer for Maimonides Medical Center in Brooklyn, N.Y.

Moroses points to HHS' Health Insurance Portability and Accountability Act (HIPAA), a set of federal transaction and data protection regulations for health-care providers, plans and clearinghouses, as an example. "There is a disaster recovery piece to HIPAA," he says. "Of course, there are no specific guidelines on how they want you to accomplish it, but they say you do have to have a disaster-recovery plan in place that they can come in and look at if they want."

For HIPAA, Maimonides must keep pediatric records for up to 21 years and adult patient records for seven years.

"The biggest thing [in HIPAA] is the impact of the audit trails," Moroses adds, explaining that audit trails, created by archival software to show transaction history, often take up as much space on disk as the data itself. "That really is a huge impact on your storage. I need to know what transactions are occurring on a daily basis, who is accessing the network, how they are using it, and I need to keep the [audit logs] for a long period of time."

Moroses has turned to DataCore Software's SANsymphony software, which combines storage resources from distributed disk drives into a manageable pool. The pool contains data from a mainframe server, five Unix servers, and 135 Windows and NetWare servers located across seven campuses and 40 outlying facilities.

"Add the paper medical records kept off-site, and it becomes a real burden," Moroses says. "Once you get to that standpoint or are forced into it by HIPAA, you are looking at high-availability storage-area networks and HIPAA-compliant electronic medical records with the necessary audit trail built into them."

Keeping tabs on employees

State regulations can be killers, too. At North Carolina State University, IT managers are grappling with stringent human resources regulations, says Henry Vail, systems architect at the Raleigh university.

For instance, NCSU must electronically archive employee records for 30 years after employment ends. "Some records are quite extensive — the paper files are at least two inches thick per employee," Vail says, noting that he is looking at StorageTek's VolSafe for secure data storage and chose Documen-tum's Document Asset Management software to build an audit log, which makes the records easier to retrieve.

Documentum, EMC, Legato and StorageTek are among a handful of vendors talking compliance (see chart).

Enterprise Storage Group's Gerr summarizes the difficulty IT managers face in following data storage laws these days. "If I was an IT manager, I would feel totally lost right now because there are few vendors talking about compliance. It's really the Wild West." ■

Choosing products for regulatory compliance

Meeting mandates on data archival and retrieval spelled out by HHS, IRS, SEC and other government agencies means finding the right combination of hardware, software and services that allow compliance.

Look for hardware that:

- Stores data on disk for easy and fast retrieval.
- Supports write-once-read-many and non-erasable disk formats to ensure data integrity.

Products to consider: EMC's Centera disk-based array, Hewlett-Packard's 2200mx optical jukebox, IBM's 3995 Optical Library and 7133 Serial Disk System, Plasmon's G-Series and M-Series magneto-optical libraries, StorageTek's VolSafe secure media technology.

Look for software and services that:

- Link individual records, images or e-mail messages by searchable metadata for quick access.
- Build indexes for each transaction for easy retrieval and auditing.
- Provide audit logs that show when data has been accessed and by whom.
- Secure stored and archived data, including e-mail messages, to prevent changes.

Products to consider: CYA Technologies' iArchive, Documentum's Enterprise Document Management and Documentum Compliance Solution, GoldenGate's GoldenGate, IBM's Content Manager, KVS' Enterprise Vault, Legato Systems' ArchiveXtender, EmailXtender and EmailExaminer, Tumbleweed Communications' Secure Archive.

Services to consider: Iron Mountain's Digital Archive, Zantaz's Digital Safe.

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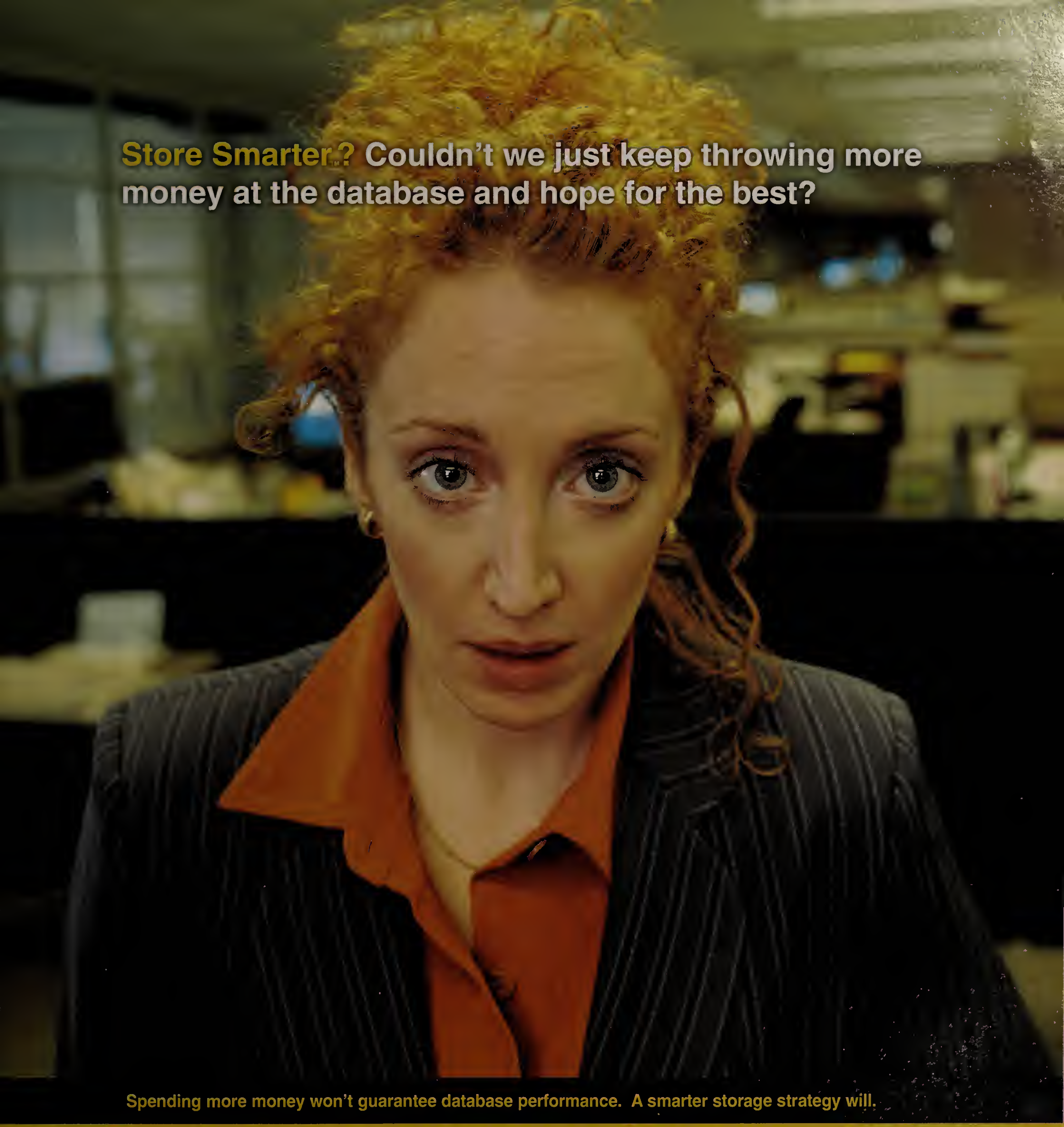
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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

RDMA offers low overhead, high speed

■ **BY ARIEL COHEN**

Emerging network technologies such as 10G Ethernet and InfiniBand make it possible to link servers at high speeds, but for servers to fully benefit, network interfaces need to be replaced with a more efficient architecture.

Traditional hardware and software architecture imposes a significant load on a server's CPU and memory because data must be copied between the kernel and application. Memory bottlenecks become more severe as connection speeds exceed the processing power and memory bandwidth of servers.

Remote Direct Memory Access (RDMA) is a network interface card (NIC) feature that lets one computer directly place information into the memory of another computer. The technology reduces latency by minimizing demands on bandwidth and processing overhead.

This is achieved by implementing a reliable transport protocol in hardware on the NIC and by supporting zero-copy networking with kernel bypass.

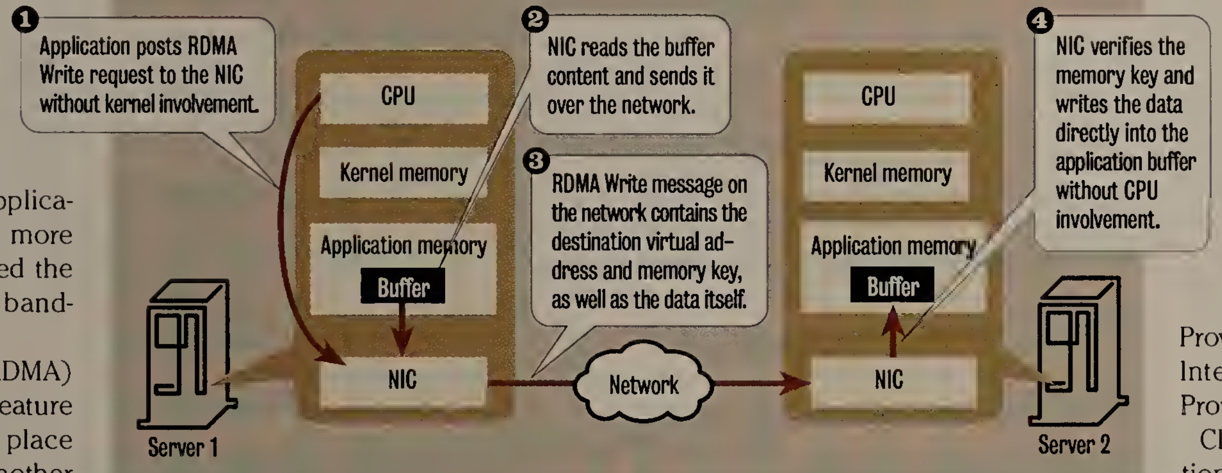
Zero-copy networking lets the NIC transfer data directly to or from application memory, eliminating the need to copy data between application memory and the kernel.

Kernel bypass lets applications issue commands to the NIC without having to execute a kernel call. The RDMA request is issued from user space to the local NIC and over the network to the remote NIC without requiring any kernel involvement. This reduces the number of context switches between kernel space and user space while handling network traffic.

■ **HOW IT WORKS**

Remote Direct Memory Access

With an RDMA Write operation, buffer content is transferred directly from the memory of one server to another.


① Application posts RDMA Write request to the NIC without kernel involvement.
② NIC reads the buffer content and sends it over the network.
③ RDMA Write message on the network contains the destination virtual address and memory key, as well as the data itself.
④ NIC verifies the memory key and writes the data directly into the application buffer without CPU involvement.
CPU
Kernel memory
Application memory
Buffer
NIC
Network
Server 1
CPU
Kernel memory
Application memory
Buffer
NIC
Server 2

When an application performs an RDMA Read or Write request, no data copying is performed. The RDMA request is issued from an application running in user space to the local NIC and then carried over the network to the remote NIC without requiring any kernel involvement. Request completions might be processed either entirely in user space (by polling a user-level completion queue) or through the kernel in cases where the application wishes to sleep until a completion occurs.

RDMA operations let an application read from or write to the memory of a remote application. The remote virtual memory address for the operation is carried within the RDMA message. There is no need for the remote application to do anything other than register the relevant memory buffer with its local NIC. The CPUs in the remote node are not at all involved in the incoming RDMA operation, and they incur no load.

Key value

An application can protect its memory from arbitrary access by remote applications through key value use. The application issuing the RDMA operation must specify the correct key for the remote memory region that it is trying to access. The remote app obtains the key value when it registers the memory with its local NIC.

The issuing application also must determine the remote memory address and the key for the memory region. The remote application informs the issuing application about the beginning virtual address, size and key of the memory region. It transmits this information using a send operation before the issuing application can start issuing RDMAs to that memory region.

InfiniBand networks and networks implementing the Virtual Interface Architecture support RDMA. RDMA over TCP/IP using NICs with transport offload engines is under development.

Protocols that use RDMA to achieve high performance include Sockets Direct Protocol, SCSI RDMA Protocol (SRP) and Direct Access File System (DAFS). Communication libraries that use RDMA include Direct Access Provider Library (DAPL), Message Passing Interface (MPI) and Virtual Interface Provider Library (VIPL).

Clusters running distributed applications are one of the first areas where RDMA can make a strong impact. Using RDMA through DAPL or VIPL, database software running on clusters can scale better and achieve higher performance with the same number of nodes.

Clustered scientific computing applications that use MPI also see a dramatic performance improvement as a result of the low latency, low overhead and high throughput that interconnects supporting RDMA provide. Other early applications of RDMA are remote file server access via DAFS, and storage access for blade servers via SRP.

RDMA is fast becoming an essential feature of high-speed clusters and server-area networks.

Cohen is a principal scientist at Topspin Communications. He can be reached at ariel@topspin.com.

Ask Dr. Internet

By Steve Blass

Are there any open source software tools for creating PDF files from Word documents?

A program called GhostWord provides the ability to click an icon in a Word toolbar and generate PDF files. GhostWord and GhostScript work together to create a PostScript version of the document and then that to PDF. In typical open source fashion you need to install three software packages in the proper order. First, install GhostScript, available at www.ghostscript.com. Second, install the Adobe Postscript Driver available from www.adobe.com/support/downloads. Install the PostScript print driver as a Local printer and choose File for the printer port. This installs a virtual PostScript printer on your system to be used in creating PDF files. Third, install GhostWord, available from www.et.dtu.dk/Software/GhostWord. After GhostWord is installed, start Word. You should notice a new toolbar icon for GhostWord labeled DOC/PDF on the far right of the Word toolbar line. Clicking this GhostWord icon brings up a conversion dialog. Select the PostScript printer you just installed and click Convert. The system will generate your PDF document and launch Acrobat Reader to display the result.

Blass is a network architect at Change@Work in Houston. He can be reached at drinternet@changeatwork.com.

GEARHEAD
INSIDE THE NETWORK MACHINE
Mark Gibbs

Even more Zen of PHP

Are you sitting comfortably? Then we'll begin ....Actually we'll begin with an error: Last week editing gremlins obfuscated a line in the section where we showed PHP code that demonstrated variables changing type with wild abandon. We won't print the full text but simply note that in PHP "single line comments can be prefixed with either "#" or "//" and multiline comments can be framed with "/* ... */".

OK, so last week we promised you PHP's object model. We should note that an object is a load of code and variables that are wrapped up such that all you can usually access are the object's public functions. In the object-oriented programming world these functions are called methods, and whatever variables are public are referred to as properties.

In PHP, things are more liberal because there is no mechanism to enforce the privacy of the methods and properties of an object. This is good because there isn't the associated computational overhead required to protect the internals of an object, but it also is bad because poor programming could violate and corrupt the object model.

In PHP (and in many other languages) you create objects from classes. A class is a template from which a specific object — an instantiation — is created. You can create multiple objects from the same class, so if we had a class called "horse_class" with properties of "name" and "color," we could create multiple objects to represent specific horses. Here's our class declared in PHP:

```
    class horse_class
          {
          var $name="";
          var $color="";
          function getDetails()
                {
                print "<br>The horse's
name is $this->name and it is $this-
>color<br>";
                }
      }
```

This class provides variables to hold data and a single method that outputs those details on request. The special variable $this stands for the object that $this is within, letting us access the properties and methods local to the object. Note that we're outputting HTML, which can be as complex as you please. OK, let's create some objects:

```
  for ( $count=1; $count<=10; $count++ )
  {
   $horse[] = new horse_class();
  }
```

Here we've used a loop that indexes from 1 to 10 and creates an array of 10 horse_class objects (PHP automatically creates the array index so it is unnecessary to write "$horse[$count]").

Another cool feature of PHP arrays is that you can assign your own index value. By default, array indexes start at 0, but you can assign any value as the index for each element. Thus, you can have an index that starts from 1 or any other number, or you can use string values. This last feature is very useful, as you can create "associative" arrays where the index strings act as keys. For example, let's create a 2-D array element (effectively an array in an array):

```
 $animal[90] = array (
   name=>"Casey",
   species=>"dog",
   color=>"gold" );
```

If we were to access $animal[1] [species] the value "dog" would be returned.

There's a lot more to PHP arrays. You can get the size of an array, loop through either a regular or an associative array, add, insert and remove elements, concatenate and break up arrays, and sort the elements numerically or alphabetically. Let us now set the properties of the horse objects:

```
   $horse[1]->name = "Dorothy";
   $horse[1]->color = "chestnut";
   $horse[2]->name = "Winston";
   $horse[2]->color = "gray";
```

To print the properties of the objects in the horse array we could use:

```
   foreach ($horse as $temp)
     {
       if ( $temp->name != "" )
       {
         $temp->getDetails();
       }
     }
```

This code indexes through the elements of the array of objects called $horse, skipping all objects that don't have their name property set and printing out the details of each that does using the object's method. Again, there's a lot more to PHP objects — check out the PHP manual's Classes and Objects chapter at www.nwfusion.com, DocFinder: 4830.

We could fill many more columns with an exploration of PHP nuts and bolts, but there's really no substitute for actually playing, er, working with code.

Next week: a great PHP development system. Details to gearhead@gibbs.com.

Cool Tools

Quick takes on high-tech toys

By Keith Shaw

Toshiba readies Centrino notebooks

One company I missed in last week's roundup of Centrino-based notebooks was Toshiba's Computer Systems Group. Toshiba says its Satellite Pro M15 would be the first Centrino notebook available on retail shelves. Other notebooks that will include the Centrino technology (chipset, mobile processor and integrated 802.11b wireless) include the Satellite Pro M10, Tecra M1 ($2,154), Tecra S1 ($1,979) and Portege R100 notebooks, Toshiba says.

The M10 and M15 include a 15-inch display, NVIDIA GeForce4 420 Go graphics cards, Harman/Kardon stereo speakers, and a DVD-ROM/CD-RW combination drive. Toshiba says the device offers 5.5 hours of battery life on one battery, and up to nine hours with two batteries. The M15 starts at $2,000, and the M10 starts at $2,079.

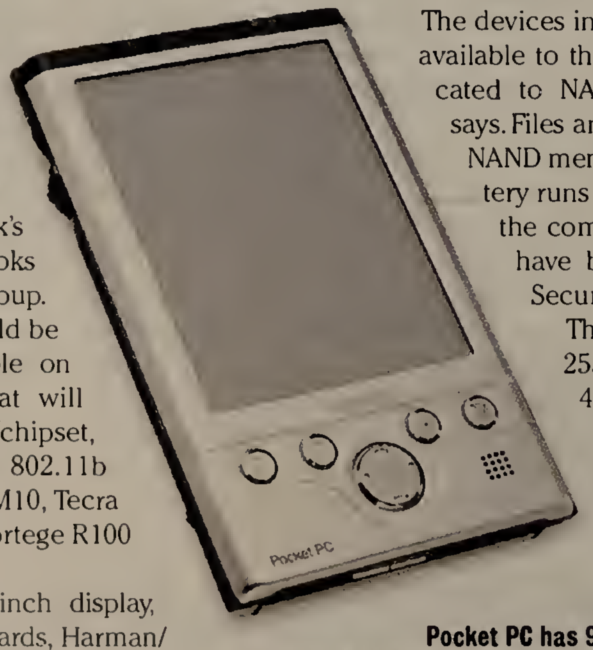
The Portege R100 weighs only 2.4 pounds and measures 0.5 inches thick, Toshiba says. The notebook includes options for integrating 802.11a/b in addition to 802.11b only. The device has a 12-inch display, up to 30G bytes of hard-drive space and an optional PC Card DVD drive. The primary battery includes up to two hours of battery life, and a second battery brings the total battery life to nine hours. The device starts at $2,200 and is available through Toshiba's Web site (www.shoptoshiba.com).

Toshiba launches new Pocket PCs

Toshiba also launched a new Pocket PC, the e750 series, with expanded memory features and built-in 802.11b wireless support. The e750 and e755 models both cost $600, the company says.

The devices include 96M bytes of memory available to the user, with 32M bytes dedicated to NAND flash memory, Toshiba says. Files and applications stored in the NAND memory remain intact if the battery runs down or needs a hard reset, the company says. The devices also have built-in Compact Flash and Secure Digital expansion slots.

The models include Intel's PXA-255 XScale processor at 400MHz, run the Pocket PC 2002 operating system, and have a 3.8-inch color screen at 240-by-320 pixel resolution. The devices measure 4.9- by 3.1- by 0.6-inches, weigh 3.9 ounces and include a removable Advanced Li-Ion battery.



The Pocket PC has 96M bytes of memory and built-in 802.11b wireless support.

D-Link joins 802.11a/g wireless parade

D-Link recently announced it is shipping a router, PC Card and PCI Card capable of connecting to 802.11a, 802.11b and 802.11g (prestandard) wireless networks. D-Link says it will ship an 802.11a/b/g access point by the end of this month.

The equipment offers speeds up to 54M bit/sec in 802.11a and 802.11g modes, and also is backward compatible with 802.11b networks, D-Link says. The DI-774 wireless broadband router costs $300 and includes four 10/100M bit/sec Ethernet ports and an embedded Dynamic Host Configuration Protocol server.

The other products include the DWL-AG650 CardBus (PC Card) for $100, which lets notebook users connect to 802.11a, 802.11b or 802.11g networks. The DWL-AG520 is a PCI Card ($100) that connects desktop computers to a wireless network. The DWL-7000AP (pricing not announced) is an access point that includes 802.11a, 802.11b and 802.11g connectivity. The access point will support 64- and 128-bit Wired Equivalent Privacy encryption, D-Link says.

Other companies also recently announced 802.11a/g equipment in various forms, including SMC, Linksys and Netgear.

Shaw can be reached at kshaw@nww.com.

D-Link's DWL-AG650 CardBus PC card lets network users connect to 802.11a, 802.11b or 802.11g networks.

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EDITORIAL

John Dix

Nortel seeks enterprise limelight

Malcolm Collins, the recently appointed president of Nortel's Enterprise Networks group, admits customers have been asking questions about the company's relevance and, indeed, its ability to survive. But when he stopped by Network World last week he said that is largely behind the company now.

Although Nortel finished 2002 with a loss of $3.6 billion on revenue of $10.6 billion, the heavy cutting the company did last year should pay dividends this year. Collins says Nortel expects to report a profit in the second quarter.

And in terms of relevance, Collins says the high-end voice-over-IP products announced last October and the complete refresh of the company's LAN products will get customer and channel attention.

Asked if the latest convergence push is coming too late, Collins, an 11-year Nortel veteran, says every technology has a prime time. He argues that the other vendors were too early, hawking systems when customers didn't yet have the proper QoS, power over Ethernet and management infrastructure in place. "I think we're hitting it just right."

The Enterprise group represents about 25% of Nortel's revenue, or roughly $2.5 billion, and of that the Meridian PBX line represents the largest single chunk, about 40%. Collins says Nortel will be able to parlay its leadership position in voice into a No. 1 position in convergence. "The perception of the company today is we have a complete portfolio and the applications to go with it," he says.

The LAN side represents more of a challenge, where, by Collins' own account, he has only 10% market share. "Where we're coming from, we have to have technically superior products."

The biggest challenge, he says, is convincing value-added resellers (VAR) that there is an alternative to Cisco. He'll do that by offering better margins and relying on a branch model the company just adopted. With this approach, some employees in regional offices are dedicated to working with VARs while others bang directly on the doors of potential customers.

The other big challenge, Collins says, is convincing enterprise customers that there is enough market competition to make it worthwhile to put jobs out for bid. "Why wouldn't you put a Layer 2 or 3 job out to tender?" he asks. At the very least you'll get a better price, he says, and you might be surprised at what you find.

Whether Collins can convince the world that Nortel Enterprise is back, we have to agree with him that having a strong competitor to Cisco can only help the market. And he's right: it can't hurt to seek multiple bids.

— John Dix
Editor in chief
jdix@nww.com

opinions!

Securing the 'Net

In his column "Can the 'Net ever be secure?" www.nwfusion.com, DocFinder: 4825), Thomas Nolle says anonymous routing of Internet messages is a "principle" of the Internet and that ensuring messages are traceable to their source is an invasion of privacy. This is a fundamental misapprehension of how the Internet works. By definition, any packet not traceable to a source network is malicious. Anonymous transmission was certainly never a principle of the Internet. TCP/IP designers simply failed to foresee that anyone would want to spoof source addresses. Forged source addresses are simply a defect of the original design of TCP/IP, and it is one we can and should fix.

Nolle also greatly underappreciates the burden hackers place on network administrators. Was he thinking about whom his audience is when he asked rhetorically, "Has your own life been disrupted by Internet hackers?" (His implied answer is "No.") I'm certain the majority of *Network World* readers have, like me, wasted hundreds of hours of our personal time battling hacker disruptions, virus outbreaks and other malicious attacks.

Mel Beckman
President
Beckman Software Engineering
Ventura, Calif.

Nolle responds: It's my view that an architecture that depends on the originator of a packet identifying himself correctly is an architecture that has as a principle anonymous routing. A packet can be presented and routed to the destination without a correct source; that sounds anonymous to me.

I don't underappreciate the burden hackers place on those who have to deal with them. I simply don't believe this justifies the broader social price of surveillance of Internet traffic, particularly when messages that originate outside the range of U.S. law won't be subject to any rules we make.

White box vs. brand name

Regarding Mark Gibbs' BackSpin column "White box or brand name?" (DocFinder: 4826): I work at a small firm of about 30 employees. Every one of our computers is a white box. I like being able to go to any computer store and get a replacement part if what's broken isn't under warranty. I don't need to worry about compatibility issues in hardware or waiting for someone else to come out, and upgrading is simple. In an architectural firm where time is more than just money, I can't wait to get a proprietary replacement. I can even keep a small stockpile of PCI cards, hard drives and other parts, just in case, so that my downtime is low.

Mark Minson
Network administrator
EDA
Salt Lake City

I've thrown in the towel on brand-name client machines. A typical hardware-related tech support call to either of my organization's former Tier-1 computer manufacturers began with an aggravating voice menu process, an even more aggravating identification process, and then — if lucky — after 10 to 30 minutes, I could begin to address the problem.

Now I only purchase PCs from a white box maker that lets me approve the high-quality components, offers a simple and expandable chassis design and a seven-year guarantee. When I need a part replaced, one phone call overnights it to my desk.

Andre De Leon
Network administrator
Tanque Verde School District
Tucson, Ariz.

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

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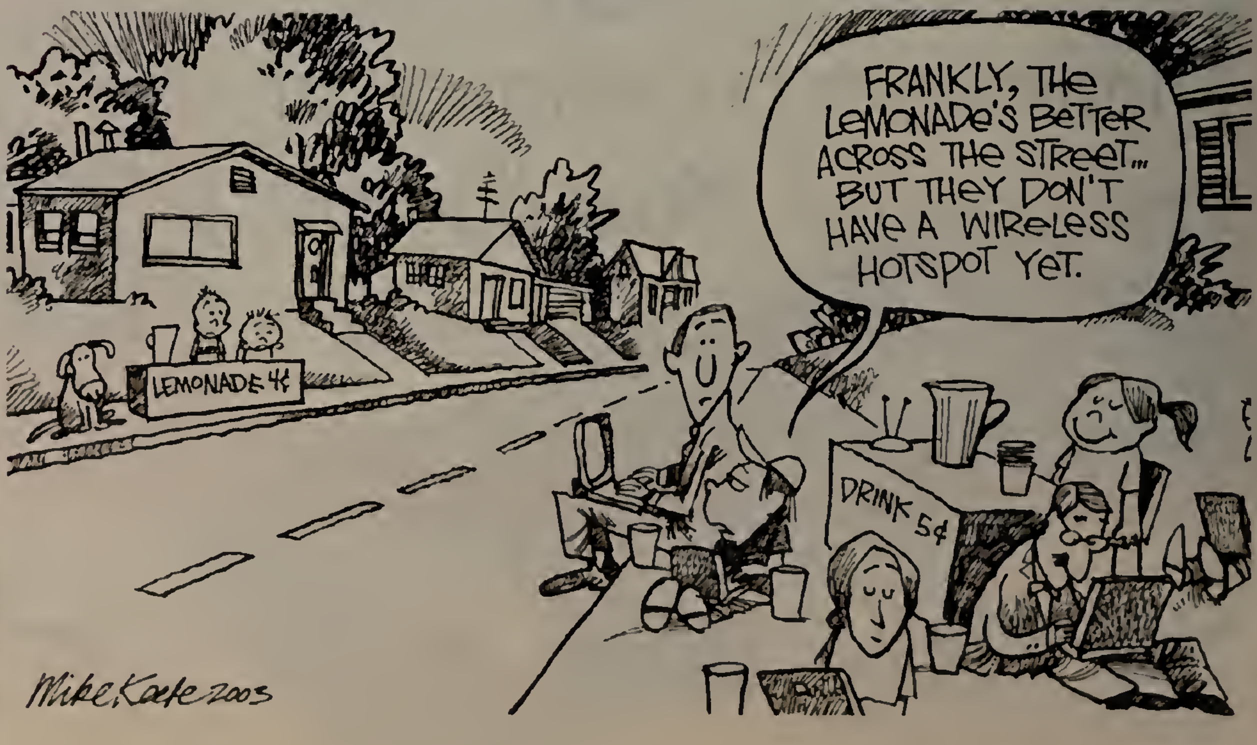
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PACKET EVANGELIST

Steven Taylor

Opening our minds to managed services

Managed services let you deploy services faster, accomplish more using existing staff and gain access to skills you don't possess. However, many companies seem reluctant to use them, and this might have more to do with historical beliefs than today's reality.

What many people today consider dedicated services are actually managed services. For instance, when you buy a private-line service such as T-1, there's very little that's "private" about it. The bandwidth is dedicated, but the service provider handles all the operation, administration and maintenance for the service.

The differentiation between a standard service and a managed service also is highly dependent on the user-to-network interface (UNI) between the network and customer premises. The UNI for standard frame relay and ATM services is on the network side of the DSU/CSU. The DSU/CSU and everything on the customer side is customer premises equipment (CPE). Everything else belongs to the service provider. So a "managed service" starts whenever traditional CPE is provided and managed by the service provider as a part of the network.

Many younger network professionals have trouble understanding why the typical UNI is where it is. The UNI's location has nothing to do with technology and everything to do with politics and history.

Twenty years ago, we had "the phone company." And even after divestiture, the majority of domestic telecommunications was in the hands of AT&T and the seven regional Bell operating companies for several years. At that point, if the phone companies had possessed the technical expertise and priced services appropriately, most corporations would have bought full data transport services from them. But regulators were concerned that letting the phone companies provide CPE and computing equipment would concentrate too much power in one entity and inhibit competition. Consequently, regulations were established that severely limited the scope of data services that the phone companies could provide.

To combat the phone companies' lack of technical expertise, data communications professionals emerged who were trained to take the basic services from the service provider and add intelligence on top of them. T-1 multiplexers, routers, PBXs and the entire LAN infrastructure evolved independently of the service providers.

Fast-forward 20 years. Rampant competition exists, so most of the regulatory barriers for moving the UNI into the corporate site have been removed. Today, service providers have the ability and expertise to provide essentially any part of the network.

It's time to move our thinking forward with these advances. Managed services offer tremendous potential for most companies. All we have to do is open our minds to include these services as viable options.

Taylor is president of Distributed Networking Associates and editor/publisher of Webtorials.com. He can be reached at taylor@webtorials.com.

Managed services offer tremendous potential for most companies.

TELECOM CATALYST

Daniel Briere

Next up: RBOCs troubles

There's been a steady hum rolling across the telecom plains for the past few months, driven in major part by the anticipation of an FCC green-light decision that will set the regional Bell operating companies loose into all sorts of growth-oriented spending. Lately, most people have taken to saying that we're on the rebound, things are looking up, spending is coming and the industry is going to "get busy" again.

Well, I hope so. But there's this nagging part of me that doesn't get it. The RBOCs have won the war against the competitive local exchange carriers (CLEC) largely by starving them out of existence. Now the Bells want to enter long-distance, video services, voice-over-IP (VoIP) services, enhanced services and other such markets, and that's how they're going to jump-start growth again and get us all to pay more money than we are today.

You buy that? I don't. While the RBOCs are financially stronger than many of their competitors, what is it that the RBOCs have won? Let's look at the general market that the RBOCs face over the next years:

- Second-line growth is negative as people cancel dial-up lines and install cable modems at a 2-to-1 pace over DSL.
- Voice lines are being disconnected (or not ordered) as more people use cell phones as their primary line.
- Features are being disconnected, and bundling options are lowering margins.
- Voice long-distance rates are moving toward $0.00 (literally) as the cost of completing calls plummets. With VoIP, calls can ride over existing networks for fractions of a cent.
- IP Centrex services are coming online as IP PBXs are the rave.
- Video is the rally cry for next-generation services to compete with cable's triple play of voice, data and video.
- Wireless LANs and hot spot services will sap 3G revenue growth.
- Robust alternatives for metropolitan networking are challenging RBOC metropolitan models.

The list goes on. Most of the near and midterm growth areas for the RBOCs are not likely to yield the results they would like to see, yet everyone is saying that "we've turned the corner" or "we've bottomed out." We might have run out of firms to go bankrupt, but clearly the RBOCs are not out of the woods — there's a lot of pain coming in the next two years.

The cable industry is going to hit hard at the small office/home office and midsize business markets with solid voice, data and video bundles. I wouldn't be surprised to see them add cellular services, too.

The wireless industry is going to hit hard at the RBOCs' future data growth and line growth. The wireless industry is not all that healthy: It has traded line quality and battery life for flashy phones, but this really hasn't increased revenue that much. After giving tons of free night and weekend minutes, now it is bundling family plans where all family members can talk to one another for free. Heck, they're running out of people to give free stuff to.

The entertainment industry does not seem to need the RBOCs — or at least is not seeing how they fit into the equation. Instead, Hollywood has chosen to do a lot of future development on its own.

The data industry is seeing a large uptick in alternative and competitive services. Companies such as Time Warner Telecom are offering metropolitan LAN services at a great price in a large number of buildings and cities.

Everyone has switched to a new customer focus: small business. This isn't really new, but just the latest marketing line. The RBOCs are talking a good story, but the market has gotten crowded, and the first services aimed at this group haven't even been launched yet.

So when people say the RBOCs have won and are sitting pretty, I have to wonder. From where I sit, the issues are very tough and will require investment, creative and differentiated services, and swift and reactive decision-making. These are all counter to what we've seen from the RBOCs lately.

Briere is CEO of TeleChoice, a market strategy consultancy for the telecom industry. He can be reached at telecomcatalyst@telechoice.com.

We might have run out of firms to go bankrupt, but clearly the RBOCs are not out of the woods.

op
managem

Vendors are corralling support for the Storage Management Interface Specification, but will this attempt at openness pass user muster?

■ **BY MELISSA MARCUM**

Imagine running the latest version of EMC's Enterprise Control Center Open Edition to migrate data from a midrange HP StorageWorks array to an IBM Shark. Or being able to set up replication from a Web browser between a Hitachi Lighting and an EMC Symmetrix.

Sounds far-fetched and years away from reality. But the first open storage management standard that will make this possible — at least in theory — is just around the corner.

Version 1.0 of a common standard for managing storage-area networks (SAN), often called Bluefin but known officially as the Storage Management Interface Specification (SMIS), is due out by mid-June, the Storage Network Industry Association (SNIA) says. More than 200 storage vendors, including major players such as EMC, Hitachi Data Systems, HP, IBM and Sun are working on such standards under the SNIA's aegis. A host of storage users from around the country also participate in the SNIA.

SMIS embodies the Distributed Management Task Force's Web-Based Enterprise Management architecture, which provides the foundation for offering services over the Web, and draws from the Common Information Model, a schema that lets management software interoperate. In general, SMIS will provide a common management interface for all SAN components, including disk arrays, switches, host adapters and servers.

SMIS 1.0 will include must-have features, the SNIA says. These include common interoperable and extensible management transport; automated discovery, which means when SMIS 1.0-compliant products are plugged into a SAN they will automatically announce their presence and capabilities to network constituents; and resource locking, which will allow resource sharing among SMIS 1.0-compliant wares from multiple vendors.

Here today, but deployed tomorrow

Storage vendors such as EMC have promised to ship SMIS 1.0-compliant products by mid-year, and the SNIA reports that early demonstrations and testing are verifying compliance and interoperability. Still, many industry watchers express skepticism about how quickly open standards will manifest themselves in enterprise storage networks.

"Even though many of the major storage vendors will push [SMIS 1.0]-compliant products out by the end of this year, in actuality we won't see tangible user results until two or three years down the road," says Anders Logren, a senior analyst with Giga Information Group.

Many users, while acknowledging standards are needed, are uncertain about how realistic open storage management is for the near term. Concerns they voice relate to how SMIS 1.0-compliant products would work in their existing infrastructures, whether these products make others obsolete and the cost to implement open management standards.

Others are concerned that SNIA standards work is controlled more by vendor agendas and politics than technology imperatives. "Vendors should realize this is not about their own personal agendas. The ones who

ent is coming

make the open standards initiative a painless transition will be ahead of the game," Logren says.

Dave Buchanan, a network manager for Galactic Marketing, in Arlington, Texas, expresses skepticism about the ability to implement standards-based products properly within existing storage infrastructures. A small company, Galactic stores 1.4 terabytes of data on EMC and Dell storage systems, plus another terabyte of data in a network-attached storage environment. Since 2001, Galactic's storage capacity has increased by 42% each year.

"We've spent countless hours getting our current infrastructure to work effectively. I just don't see how all these vendors are going to make everything work properly with existing products — to me, that's like going to watch a football game and not knowing anything about the players," Buchanan says.

Rick Bauer, CIO of The Hill School, a private high school in Pottstown, Pa., is far less apprehensive. "I know we're all moving toward speaking the same language. I feel SMIS 1.0 is going to be just what users need to make their storage systems work more effectively," says Bauer, who also is a member of the SNIA Customer Executive Council.

Interim measures

To be sure, little doubt exists that centrally managed heterogeneous SANs will ultimately be commonplace. Collaboration within the SNIA on open management standards is just one step vendors are taking to ensure they can play in this future.

Exchanging management APIs is another big thrust, manifested through a flurry of such agreements made last summer. HP, for example, struck management API deals with EMC, Hitachi and IBM. These API swaps give users the ability to manage the different vendors' storage devices from one management console.

HP considers the API licensing agreements useful stepping stones to open standards in that they show how comparable storage products from different vendors can be managed effectively, says Phil Kemp, HP's OpenView marketing manager. "It's always been important to recognize the customer's need for heterogeneous management solutions, and last year we felt that API licensing agreements were a way to provide those solutions until industrywide standards are in place," he adds.

Tony Marzulli, vice president of open software marketing at EMC, looks for adoption of the open management standards to result in shortened development cycles, essentially bringing new features to customers faster. Standards allow EMC to share the development burden with other vendors and to put research and development resources to use in other areas, he says. "We've invested a tremendous amount in developing software that can manage storage from other vendors — both through R&D and technology swaps with other companies," he adds.

Giga's Logren notes that while the API exchanges fill the standards gap, users need to remember they are one-of-a-kind relationships that won't provide as many benefits as universal standards. "Since we do not have storage management standards in place today, API exchanges become important for users with products from vendors who exchange APIs. But since these are not completely industry-pervasive, the coverage remains spotty for many customers," Logren adds.

Aside from the SMIS 1.0 storage specification, other standards initiatives are under way. For example, the Organization for the Advancement of Structured Information Standards has formed a technical committee to develop an open standard management protocol that would provide a Web-based mechanism for monitoring and controlling network elements, including storage systems.

Ready or not, open management standards for storage are almost here.

Marcum is a freelance computer technology writer in Odessa, Fla. She can be reached at mmarcum1@tampabay.rr.com.

TAVIS COBURN

STANDARDS

Does that come standard?

A variety of standards-setting organizations are tackling bits and pieces of the storage management challenge.

Distributed Management Task Force (www.dmtf.org)

Responsible for the Common Information Model and associated Web-based Enterprise Management initiative. The Storage Network Industry Association has leveraged these standards in developing the Storage Management Interface Specification for managing heterogeneous storage-area networks.

The InterNational Committee for Information Technology Standards (www.t11.org/index.htm)

Technical Committee T11, Task Group T11.3: Responsible for Fibre Channel projects, including those addressing storage management. An example is Fibre Channel Generic Services 4, which is focused on developing enhanced services for managed and controlling Fibre Channel configurations.

Technical Committee T10: Responsible for I/O interfaces, specifically the various SCSI standards. Most of the SCSI Command Set standards cover the management of specific types of devices using SCSI commands.

Technical Committee T11.5: Recommends development of a high-level enumeration of the various sources of information — for example, an SNMP agent in a disk array or a name service in a network — and points of control in a storage network that can be accessed and employed by a management application.

Internet Engineering Task Force (www.ietf.org)

The primary Internet standards-setting body. Created SNMP, a pervasive enterprise network management protocol.

Organization for the Advancement of Structured Information Standards (www.oasis-open.org/)

Focuses on developing e-business standards. Recently formed a technical committee to develop an open standard management protocol that would provide a Web-based mechanism for monitoring and controlling network elements, including storage systems.

Storage Network Industry Association (www.snia.org)

Due to release Version 1.0 of the SMIS standard for open management of SAN devices and interconnects in mid-June.

NetworkWorld Review

Starbak Torrent VCG

Bridging the videoconferencing and streaming gap

■ BY CHRISTINE PEREY, NETWORK WORLD GLOBAL TEST ALLIANCE

Starbak's Torrent videoconferencing gateway converts a videoconference into streaming media. This would let a manager, for example, make an announcement by videoconference, while others not on the call could watch it later. We liked Torrent's architecture but the viewing experience needs refinement.

The Torrent VCG is a 1U-high server running Red Hat Linux 2.4 and a combination of third-party licensed and Starbak-written applications for streaming and videoconferencing. The server contains built-in Gigabit Ethernet connections, and has options for Networked File System-mounted storage devices.

Using a serial console interface, an administrator can assign an IP address automatically (through Dynamic Host Configuration Protocol) or manually. Other settings, such as H.323, streaming server and user configuration, are handled through the VCG Web interface. Registering with any H.323-compliant gatekeeper is easy, and ensures that Torrent is a network-based service, accessible and managed like other videoconferencing network resources, such as gateways and multipoint conferencing units (MCU).

Password-protected accounts can be created for business units or entire companies. Each account is assigned virtual "lines," up to a maximum of 10 H.323 ports per server. Through gatekeeper call routing, each call it receives or originates uses the next available port. (See How we did it, www.nwfusion.com, DocFinder: 4828).

Creating and viewing sessions

Torrent users can initiate calls with any H.323-compliant device. During the call setup, the user selects the media and tools that will be incorporated into the final presentation window. Options include video and audio, video and audio with slides, and all of the above with chat.

Users registered to the same or a neighbor gatekeeper can establish a video call to a specific line from their videoconferencing terminal by entering the alias of a specific line or to the next available H.323 port by entering the IP address of the VCG server.

For conferences that includes slides, the uploading process is straightforward and sufficiently automated. Each slide is converted to a JPEG on the server and advanced manually once a call begins. The call-initiation process was reliable, and we never had a call fail. We even maintained a call for more than three hours.

We encountered some poor video quality on a few of our calls, which the terminal diagnostics attributed to packet loss. When notified that we were having a call-quality issue, Starbak's technical assistance was responsive — potential errors in the server and network were identified and quickly resolved.

When we used the VCG to record a conference call with another videoconferencing system, the conference experience was confusing. The MCU interpreted the VCG as a full call participant and included it in the tiled layout, yet it was not contributing to the call and could not be muted.

Because the VCG's conversion of a live interactive session to a stored or Webcast experience is not transcoded, audiences watching a VCG-streamed conference receive the stream at precisely the same data rate as it is created. This avoids introducing additional delay and visual or auditory artifacts in the media stream.

But it also has a significant drawback. When a videoconference is encoding at 384K or 512K bit/sec, and 10 people are watching on a 10M-bit/sec network segment, it can get saturated quickly. To alleviate this potentially high load on an enterprise network, the Torrent user or administrator can select to multicast a stream.

The WMF stream viewing interface needs improvement in many areas. While watching a live media stream with slides, synchronization doesn't always occur, especially if you use the navigation bar to pause, stop, rewind or fast forward.

The viewer window has a progress bar, but we would prefer to see total file duration and a chronometer indicating elapsed time, and possibly an index of the slides to permit topical navigation. The video window size also is locked down in the viewer to a quarter of the screen — an adjustable window size would be a nice option. The viewer's presentation layer also needs to perform some predisplay resolution tests. Some JPEGs produced by the conversion of PowerPoint slides did not fit on the screen in the window provided, and were not resized for the display.

Session and server management and administration

When the Torrent is in a call, the management interface lets administrators, call initiators and moderators view call-specific information, including compression algorithms in use, presentation format, duration, record on/off, and the number of viewers in different formats receiving the stream. With one mouse-click, VCG account users can begin or end recording of an active session to the disk. A window in the call-center view indicates the bandwidth usage of a selected call in real time. Overall, the call center was very useful, but occasionally we encountered what we interpreted to be errors in the embedded Java applet.

The administrator or account user also can see relevant server usage statistics, including streaming bandwidth summary, active stream list, audience totals and active multicast lists. File management is easy to use, and offers insight into the number, duration, size and format of files on an account basis.

As we were unfamiliar with many Unix commands, we relied heavily on the documentation for installation and configuration. Once we were in the Web interface, the user manual became unnecessary.

Conclusion

Starbak deserves credit for developing an ingenious solution for Webcasting or recording a videoconference. This is the only all-in-one device specifically dedicated to the convergence of these two rich media forms of communication. With improvements to the viewing experience, greater Web-interface stability and the ability for a network administrator to adjust bandwidth, this platform will significantly lower the barrier for those who have videoconferencing systems and want to record a streaming media session or archive conferences.

Perey is president of Perey Research & Consulting, a market research and business development consulting company. She can be reached at cperey@perey.com.

■ Net Results

Starbak Torrent VCG 3.0

3.4
RATING

Company: Starbak Communications, (614) 865-9150, www.Starbak.com **Cost:** $37,000. **Pros:** Fills a need to stream or archive videoconferences in one fully integrated platform; gatekeeper 'friendly'; suitable for live or on-demand applications; provides multiple configurable logs for troubleshooting; easy to manage. **Cons:** Unreliable Java-based tools; slide and video not synchronized on playback/on-demand viewing; live multipoint conference call stream produces unintuitive view to streaming audience.

What's the score?	Starbak Torrent VCG 3.0
Features 50%	3
Management 30%	4
Installation 10%	4
Documentation 10%	3
TOTAL SCORE	3.4

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

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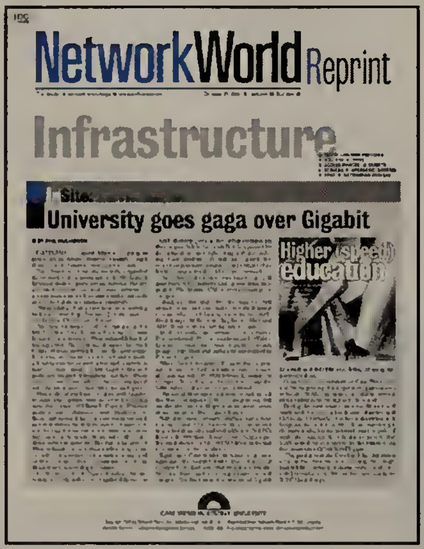
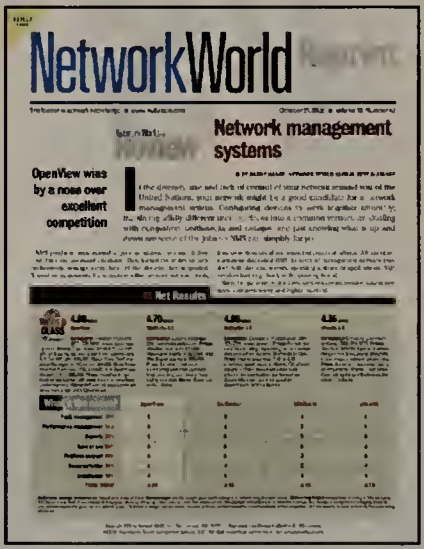


NetworkWorld Reprint

Infrastructure

University goes gaga over Gigabit

Higher-speed education



NetworkWorld

Network management systems

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Wireless Web anywhere

JESSICA ALLEN

It's all about the handoff between 802.11b LAN technology and wireless WAN standards.

■ BY MICHAEL HURWICZ

You're in a hotel lobby, using its 11M bit/sec 802.11b wireless LAN to download e-mail to your laptop, when your cab arrives. You get in, and your laptop continues downloading, though at a slower rate, all the way to the airport.

At the airport, you proceed to a passenger lounge where the transfer rate picks up again thanks to another 802.11b network. All this happens seamlessly, with no indication, other than the change in data rate, that you are moving from a LAN to a WAN to another LAN.

You can't do this today because wireless LANs based on IEEE 802.11 protocols can't talk with wireless WANs that use data-over-cellular standards such as GSM, General Packet Radio Service (GPRS) and Code Division Multiple Access. However, the major wireless carriers, including AT&T Wireless, Nextel, Sprint PCS, T-Mobile and Verizon, are expected to begin supporting such LAN/WAN handoffs, with the first implementations possibly later this year.

Let's take a step back to describe how we got to this point. Soon after the Wi-Fi or 802.11b wireless LAN standard was ratified in 1999, the technology began taking over public access hot spots such as airports and hotel lobbies.

Initially, cellular operators saw the new wireless LAN standard as competition. They had hoped to charge by the byte for data services such as text messaging, Web surfing and downloading or sending e-mail on 3G networks in which they had invested billions of dollars. They didn't want high-speed public LANs "stealing" that traffic.

During the next few years, however, a couple of things became clear: First, 3G rollout and market penetration would take longer than operators had hoped. Second, 802.11 became the overwhelming technology of choice for companies installing hot spots. Operators decided if they couldn't beat 'em, they'd better join 'em.

- In December 2001, Sprint PCS invested $15 million in Boingo Wireless, which now operates about 1,000 hot spots. Sprint PCS has talked about developing a dual-mode WAN/wireless LAN card and a service to take advantage of it.
- In January 2002, VoiceStream Wireless, now T-Mobile, purchased bankrupt MobileStar Networks, which operated hot spots at Starbucks locations. Today, the rebranded T-Mobile HotSpot service lets customers connect in about 2,000 locations such as Starbucks, Borders bookstores, airports and airline clubs. Customers also can use the GSM/GPRS WAN when no LAN connection is available.

T-Mobile also has announced plans for an integrated GPRS/Enhance Data Rates for Global Evolution/802.11b service offering, expected to arrive sometime in 2003, that would let customers switch manually between Wi-Fi and cellular.

- In April 2002, Nextel Communications announced that it was testing technology from RadioFrame Networks that would let enterprise customers receive cell phone calls indoors via a software-defined radio (SDR) system designed to combine multiple cell phone networks with 802.11 networks.

And technology is emerging to support the merged WAN/LAN vision. Nokia has announced a PC card that incorporates GSM/GPRS and 802.11b. In addition, you can create a dual-mode platform by adding a GPRS card to a laptop with built-in 802.11b.

However, there are still problems. For one thing, even though wireless carriers have bowed to the inevitability of public access 802.11b, it's still not clear how well the wireless LAN fits into carriers' business models.

Wireless LANs are less expensive than WANs, if only because they run on unlicensed ("free") spectrum. Accordingly, hot spot operators charge much less per megabyte than wireless carriers. The result is lower revenue, even for carriers that get into the hot spot business. And there's a limit to how much carriers can lower data prices on WANs, because too much data could reduce their ability to carry voice traffic — their bread and butter.

In addition, it's going to take a lot more than the right hardware in a laptop to enable seamless wireless LAN/WAN roaming. There are difficult issues involved in switching the TCP/IP sessions between networks operated by different companies, says Christian Gunning, director of product management for Boingo.

"With built-in 802.11b, you'll only really need a WAN card," says Fran Rabuck, president of Rabuck Associates, a mobile consultancy. "How or if the handoff will work between the services is a really big question."

That's one area where T-Mobile has the advantage of both being the largest hot spot operator and owning a nationwide GSM/GPRS network, Rabuck says.

T-Mobile likely will phase in wireless LAN/WAN integration, says spokeswoman Kim Thompson, with some level of integration taking place this year, although probably not transparent handoffs.

T-Mobile might find a worthy competitor in the recently formed Cometa Networks, a joint venture of AT&T, Intel and IBM (along with Apax Partners and 3i), established to provide wholesale nationwide broadband wireless Internet access, Rabuck says.

Two technologies to watch as likely enablers of transparent handoffs are Mobile IP and SDR. The Mobile IP protocol is designed to handle handoffs at the network layer (Layer 3), while leaving the transport layer (Layer 4) and above unaffected, so that the existing routing infrastructure, nonmobile hosts and applications don't have to change.

SDR operates at the data link layer (Layer 2), which is responsible for link establishment and maintenance. Because wireless LAN and wireless WAN technologies are radically different at Layer 2, a device is required to tie them together. SDR is a good option.

Hurwicz is a freelance writer in Eastsound, Wash. He can be reached at michael@hurwicz.com.

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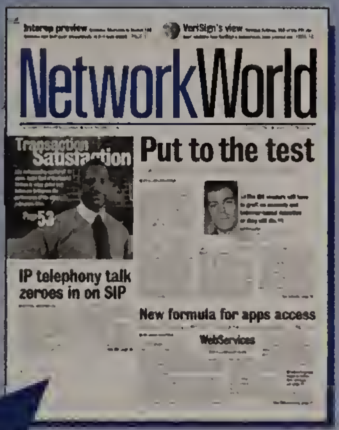

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Let's hear it for latency

TESTER'S CHOICE
David Newman

Let me be the first to admit test labs have gotten something very basic very wrong: We put too much emphasis on throughput because it's simple and sexy. What could be cooler than seeing how fast the latest network widget runs?

Plenty, as it turns out. In our recent test of 10G Ethernet switches, there were big differences in throughput (see www.nwfusion.com, DocFinder: 4725). The paradox is that the faster the network, the less important throughput becomes.

Throughput is meaningful, but only when a network is heavily loaded. Another metric, delay, is meaningful for *all* traffic, *all* the time, on *all* networks.

Devices that add high delay slow your network regardless of whether it runs at 1% utilization or at 100%. Delay doesn't have to creep into the hundreds of milliseconds before applications start conking out.

Delay with Gigabit or 10G Ethernet interfaces is usually in the dozens to hundreds of microseconds. When I write about results like this, I usually add boilerplate text saying, "applications don't suffer until delay reaches into the dozens of milliseconds."

Sorry, but I was wrong. Delays of just a few dozen microseconds can degrade performance dramatically on Gigabit and 10G Ethernet networks. The reason for the delays is TCP windowing.

In TCP, a transmitter sends only a limited amount of data before the receiver must send an acknowledgement. Windows usually include multiple packets, but if the transmitter doesn't get acknowledgements within a set time, all the packets must be retransmitted.

Because at least 80% of Internet traffic uses TCP, retransmissions can have a severe effect on application performance.

Here's where delay comes into the picture. Let's say we're using Force10 Networks' E1200 switch, receiving 1,518-byte Ethernet frames. Let's further assume network utilization is light. At 10% utilization, we would receive 81,274 frames per second, or one frame every 12 microsec.

In Win 2000 and XP, the default TCP window size is 16K bytes — meaning no more than 11 frames can be outstanding without an acknowledgement. For 11 frames at 12 microsec each, any delay of 132 microsec or more would cause retransmissions.

Two switches in our 10G Ethernet test — from Avaya and Force10 — delayed each 1,518-byte frame by more than 40 microsec. Eleven delays like that, and we're into TCP retransmissions.

Force10 recently retested its own switch with new software. Force10 says delay for large frames is now 23 microsec, roughly half of the value we measured. That's high enough to cause retransmissions at 10G rates, but at Gigabit rates TCP retransmissions won't be a problem. But window sizes change dynamically; the larger the window the greater the impact of a little latency.

It's possible to determine the effect of TCP windowing on any network. All you need are three values: frame length, TCP window size and network utilization. What does delay look like on your network?

Newman is president of Network Test in Westlake Village, Calif., an independent benchmarking and network design consultancy. He can be reached at dnewman@networktest.com.

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Wireless wise

Staff will need a new set of skills to work with wireless signals and plug security holes.

■ BY JOHN COX

Rolling out wireless LANs requires a new set of operational and network management skills that are in short supply. You'd be wise to familiarize your staff with the technology now so they're ready for future deployments.

"It's not a matter of just going out to find thousands of people who have all this wireless experience. They're not there," says Charlie Wehner, a senior analyst at Cerner, a healthcare software vendor in Kansas City, Mo. "You almost have to bring your network administrators up to speed on this."

If you don't, you face the danger of users implementing their own rogue wireless access points. What's more, the lack of experience with radio waves, the "physical" medium for 802.11 or Wi-Fi LANs, can lead to networks that don't have enough bandwidth, or to gaping security holes. Fortunately, it's relatively easy for experienced network administrators to pick up a basic knowledge of wireless LANs.

"Part of the job of being a network administrator is being able to adapt to changing technology," Wehner says. "A few years ago, you might have said 'VPN' and few people would have known what you were talking about. Now everyone knows. Wireless LANs are the same way."

The one main, and obvious, way in which wireless skills differ from traditional wireline skills is that the wire is replaced by a radio beam.

"An understanding of radio systems is quite helpful," says Christopher Misra, a network analyst with the University of Massachusetts at Amherst. Last year, the IT group created a public access Wi-Fi network for students by installing Cisco wireless access points in five locations on campus.

To secure wired networks, administrators rely on a host of physical security features: doors with locks, walls, carded access to buildings and so on. But with a wireless network, an intruder doesn't have to penetrate this physical perimeter. "You have to take into account things like controlling signal leakage, grounding access points properly, directing the radio signal to keep it within a building," Misra says.

One of the most baffling radio problems for newcomers is interference. "Whenever you're dealing with wireless, the first factor many people look at is 'what is blocking my signal?'" says Vincent Gullotta, head network engineer with LANocracy, a New Canaan, Conn., network services company. "You need to ask questions like 'what could possibly disrupt the flow of information?' and 'what is the probability that this could happen?'"

A concrete or steel construction, a metal storage closet, a temporary change in how inventory is stacked, microwave ovens or other radio signals can cause interference. Between buildings, foliage growth can even cause interference.

Like many network professionals without radio experience, Misra picked up much of his training as a kind of apprentice. "One of the key assets we had when deploying the LAN was someone with ham radio experience," Misra says. "This was of great help in deciding on antenna design, in minimizing signal leakage and so on."

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Misra walked around the campus with his colleague, whom he remembers as "the radio guy."

"The radio guy explained to me about things like [antenna] radiation patterns and cranking down the power of the access point radio [to limit how far the radio signal reached]," he says.

Cerner's Wehner learned by watching a colleague who had somewhat more experience conduct site surveys to determine where and how many access points to install.

Network administrators with a will to learn quickly can pick up the more specialized knowledge about wireless LANs. "Access points are little more than a hub with an Ethernet-to-radio converter," UMass' Misra says. "The traditional skill sets with respect to network management, device configuration and so on is pretty similar."

Coping with the wireless explosion

Large-scale wireless LANs in corporations require new expertise. Here are some tips for developing your staff:

- Look for experienced network administrators who have a will to learn.
- Impart awareness that security issues have become more urgent.
- Realize that taking a trial-and-error approach is OK; wireless is as much art as science.
- Use an apprentice system in which the experienced teach the noviced.
- Develop systematic training requirements that might include vendor courses or third-party trainers specializing in wireless.
- Create internal opportunities for continual brainstorming about changing wireless threats, products and user experiences.

Wireless security skills straddle wireline and wireless networks, experts say. Tim Stettheimer, CIO for St. Vincent's Hospital in Birmingham, Ala., becomes upset when he considers how easily the lack of wireless experience can lead to security blunders and holes.

"For example, you cannot — and this makes me nuts — roll out these wireless access points and adapters with the default configurations the vendors give you," he says. "Those defaults are well-known and well-publicized on the Web. You'd be so wide open, it's just scary."

The good news is that solid wireline security skills are the foundation for crafting strong wireless security. "Security skills for securing wireless LANs are very similar to standard networking security skills, only you have a few more factors to consider," LANocracy's Gullotta says. "The security factors are the same. You just have a new point of entry that you have to keep people from using."

Stettheimer has regular brainstorming sessions on network security, with a special emphasis on wireless issues.

"We ask ourselves why are we doing things a specific way, what threats are emerging, what biometric technologies, such as iris scanning, do we start actively researching," he says.

Along with informal sharing of practical information and experience, there also are more systematic ways to gain wireless skills.

Vendors such as Cisco and Symbol Technologies offer training, and there are a growing number of professional training and certification companies that specialize in wireless technology. One is Planet3 Wireless, which offers certifications in several areas including wireless LAN administration and wireless security. Cisco also offers Cisco Wireless LAN Design Specialist and Cisco Wireless LAN Support Specialist certifications. ■

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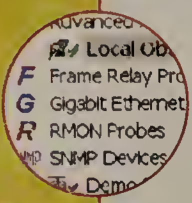

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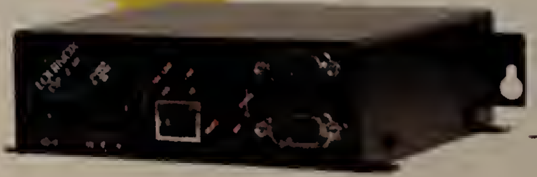

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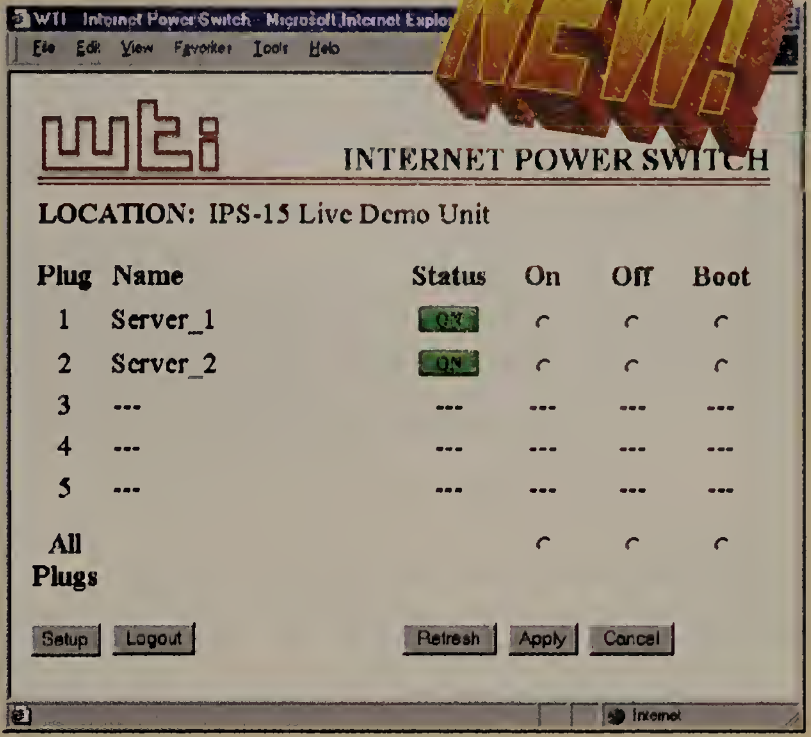
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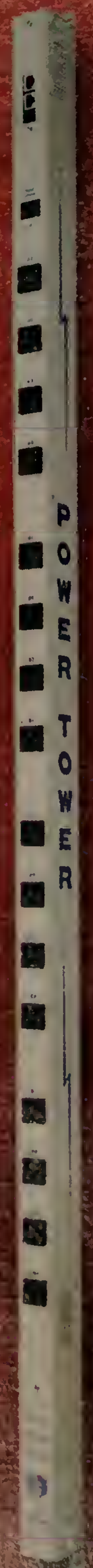

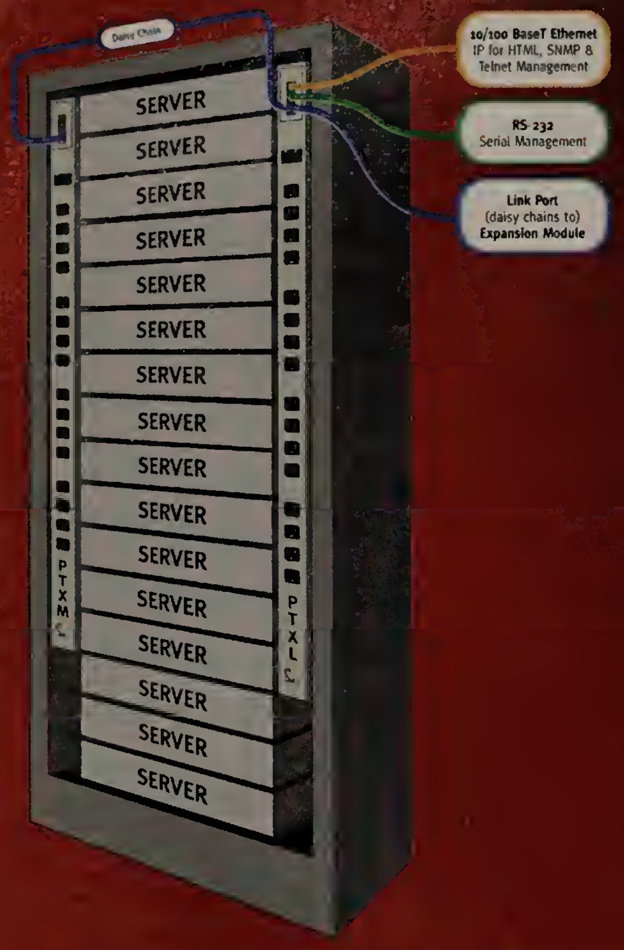
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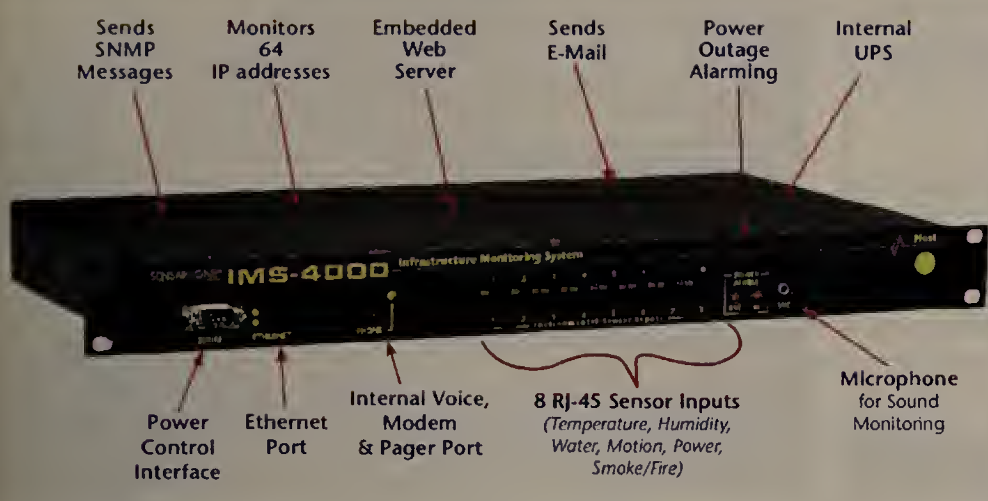

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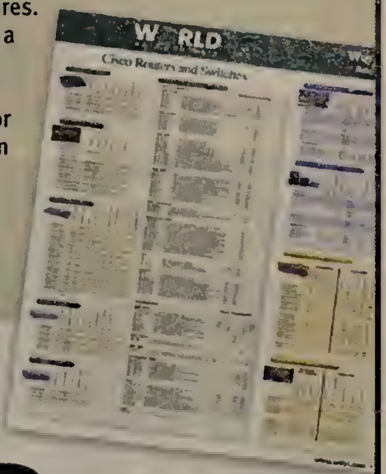

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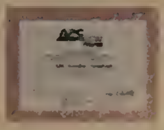

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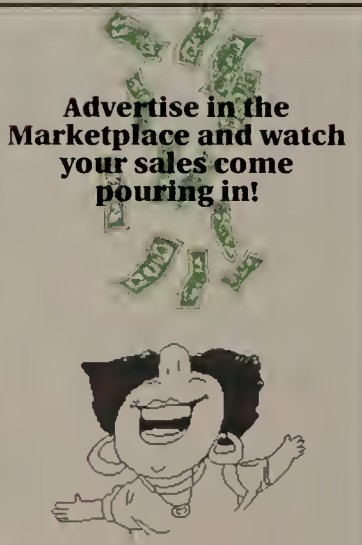

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IT Careers: Bio-IT Provides Surge of Opportunities

One way to trace career opportunity is to trace dollars allocated for research and new product development. The search in 2003 through 2006 points to bio- and chem-informatics. With funding from the National Science Foundation, the Department of Homeland Security and the Department of Defense, both areas are looking at annual growth of up to 18% per year, according to IDC research. Theo Chisholm, spokeswoman for IBM Health Sciences, said once mapping of the human genome opened the gate, the need for systems to mine and process data exploded. IBM estimates the market to exceed $30 billion per year in the U.S. by 2006.

Take note: the growth isn't just a U.S. phenomenon. Bio-IT spending, according to IDC, will more than double in the next three years in Australia and New Zealand, where more than 300 biotech firms are employing over 6,500 people.

The mission for informatics is two-fold. First, there is intense pressure to identify new targets in pharmaceuticals and health treatment quickly and at a lower cost. Just as important is eliminating targets that won't prove out as quickly as possible. In the defense and security category, there's pressure on everything from sourcing a new smallpox vaccine to addressing probable bio-toxins that could be used as weapons. On the chem-informatics front, chemistry and IT are married up in developing new detection systems for use in public buildings and areas, as well as in military action.

What's rare in the industry are people qualified for the work, knowledgeable in the sciences – biology and chemistry – as well as in applied mathematics and information technology. Companies are looking for people who have built, used and applied IT tools to data, from DNA to outcomes of clinical testing. The Whitehead Institute Center for Genome Research estimates that about half as many people are prepared for the field as are needed long-term.

For IT professionals interested in the bio-IT field, there are some stepping stones to landing the jobs. The key languages used are C++, Java, Fortran and Perl. Many times, the toughest experience to get is in the biological sciences – where IT is applied for the purpose of biological findings, not just for development of new applications. Dual degrees, for that reason, are important. Numerous master's degree programs have opened in bioinformatics, and the Center for Bioinformatics and Computational Biology offers a mentoring program. On-line courses also can supplement experience. Certifications include the Certified Bioinformatics Specialist and the Certified Bioinformatics Master.

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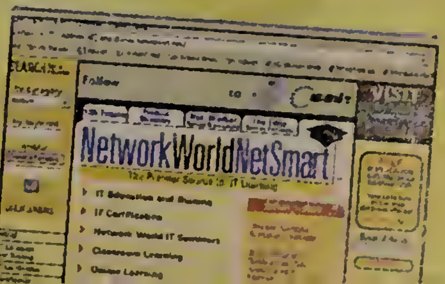

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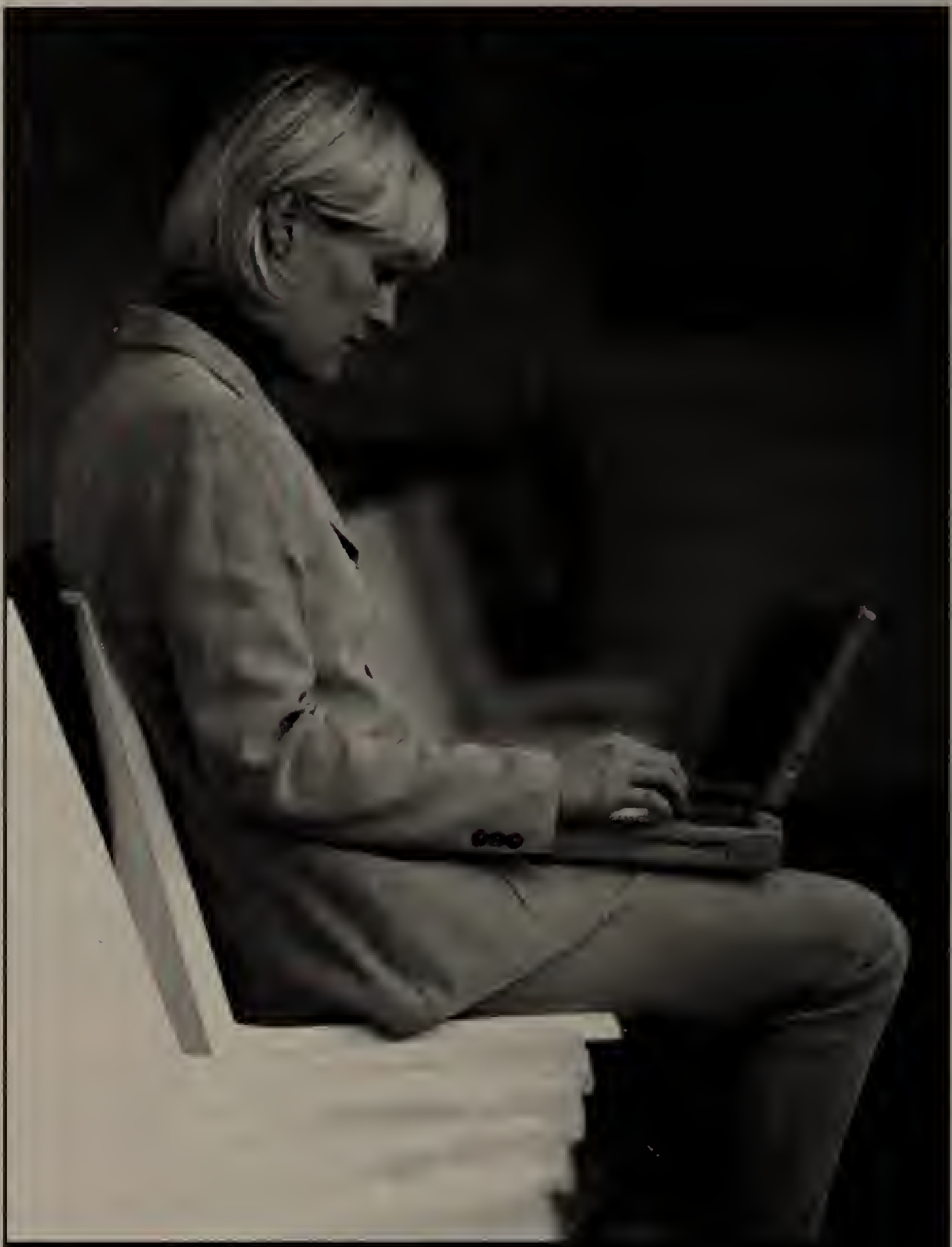

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Explore the Whole World of Communications

Microsoft

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with the International Monetary Fund in Washington, D.C.

But it will take time for Microsoft to realize its goal, which is long on vision and short on products. The company also needs to explain how its development tools, management products, server applications and operating system work together under DSI, and how the company will integrate support for non-Windows platforms.

Under DSI, Microsoft says it is developing an XML technology called System Definition Model (SDM) that will be the glue for tying together applications, servers and management tools to create a self-healing computing environment. The company says it will also include a software deployment tool that will run on Windows Server 2003 and updates to its current software distribution and server management products.

In theory, SDM would let network components talk to each other. Applications would be the focal point on the network and would communicate their needs, such as performance thresholds or server configuration. The operating system and management tools would use SDM to receive and interpret those needs, marshal the necessary resources and then monitor operation based on parameters given by the application. If the application is nearing thresholds or behaves in a way that does not meet its requirements, the network can take steps to thwart or correct the problem.

Automated management

Microsoft this week will debut its plan for a self-managing, self-healing infrastructure designed to provide automation and flexibility in managing data-center resources. Three other vendors already have detailed similar plans.

Vendor	Strategy	Approach
HP	Adaptive Infrastructure	OpenView and Utility Data Center are hub for provisioning, virtualization, SLAs, integration of business operations and processes.
IBM	On Demand, Autonomic Computing	Building management into all layers: hardware, operating system, tools.
Microsoft	Dynamic Systems Initiative	Developers will build management awareness into applications that interconnect with operating system, tools.
Sun	N1	Prime focus is on hardware with first effort in blade servers; added virtualization software through acquisition.

"They've given us a tantalizing glimpse, but not enough to say this is how this will change application development," says Peter Pawlak, lead analyst for server applications at consulting firm Directions on Microsoft.

But Microsoft is not alone. Rivals HP, IBM and Sun also have detailed complex, multiyear strategies to create computing environments capable of responding to change by dynamically allocating resources (see chart, above). Those plans take a bottom-up approach, in that management originates from a central point on the network, such as hardware or operating system. Microsoft is building its top-down model using applications that can communicate their management needs to the network.

Microsoft understands it's a complex task.

"The entire vision of absolute simplicity, flexibility and automation in the data center could be a 10-year initiative, it could be a 20-year initiative," says Brian Valentine, senior vice president of the Windows division. "The thing about Microsoft is that when we decide to go down a path like this we are pretty persistent. We'll put in the appropriate resources and we will learn as we go along."

Experts say Microsoft needs to develop a wider range of tools such as network node managers and help desk tools and has at least one glaring lesson to learn.

"If Microsoft stays with its plan, they need to eventually include integration with other platforms," says Corey Ferengul, vice president of service management strategies at Meta Group.

Network executives realize the potential, but are jaded by Microsoft's track record on grandiose pronouncements. "We've seen the presentations and the acronyms and we are trying to understand it," says Michael Niehaus, IT consultant for Marathon Oil. "The question is, what does DSI turn into? Microsoft is good at redefining acronyms as it goes along."

Niehaus says his focus now is on Microsoft's System Management Server (SMS) 2003, which will officially ship this fall but which Marathon is deploying now to manage 12,000 desktops.

What the DSI acronym defines now is a loose collection of technologies and products under development.

DSI's most critical component is SDM, which is an ill-defined XML technology that will be built into applications, the operating system and management tools. "The mechanics of how SDM gets done have not been sufficiently worked out," says Cameron Haight, research directory for Gartner.

"The operating system will provide the SDM schema engine, and developers will build SDM support into their applications using Visual Studio .Net," says Kirill Tatarinov, corporate vice president of Microsoft's newly formed enterprise management division. "It's a huge change in how Microsoft thinks about management."

Microsoft also will use the proprietary SDM to support Web services integration with other platforms such as Unix and Linux. The company has yet to define exactly how that will work, but emphasis is being put on third-party independent software vendors to develop those links.

Ferengul says he is encouraging Microsoft to submit SDM to a standards body. Efforts are underway without Microsoft at the Organization for the Advancement of Structured Information Standards (OASIS) to create a Web services management standard.

"We are watching what is happening in the OASIS group," says David Hamilton, Microsoft's director of product management in the enterprise management division.

Microsoft will start to build SDM support into Visual Studio.Net later this year, but support added to the operating system and management tools won't come until Windows Longhorn ships, which is slated for late 2004. Microsoft says completion of the first wave of the management platform should be finalized with the Blackcomb release of Windows, which will likely slip to 2007.

Microsoft also plans to release a management tool called System Center in that time frame that will tie into the DSI architecture.

System Center will be an integration of Microsoft Operations Manager (MOM), an event- and performance-monitoring tool, and SMS to create a tool that manage desktops, laptops, PDAs, applications and servers. Microsoft says it also will deliver tools for change and configuration management, asset management, application management, IT process orchestration, performance trending, reporting and capacity planning.

The first iteration of System Center, slated to ship next year, will group into a suite SMS 2003 and MOM 2004, which Microsoft unveiled last week and plans to ship mid-2004. The new version of MOM includes an updated console and new management packs. Future versions of System Center will more closely integrate SMS and MOM. Microsoft also hopes to entice hardware and software partners to build their products to support the DSI architecture.

Microsoft's first tools under DSI will be Automated Deployment Services (ADS), which will ship midyear as an add-on to the forthcoming Windows Server 2003, and Windows System Resource Manager, a tool to allocate processors and memory, which is already part of the new operating system. ADS will let companies automatically load Windows 2000 and 2003 on servers that have no operating system installed.

With all the moving parts and disjointed release dates, experts say Microsoft needs to better explain how its management platform will tie together.

"It may be just a matter of pulling together Microsoft's product groups, but if they can make this happen, it will make Microsoft more competitive in the datacenter," says Audrey Rasmussen, vice president of research at Enterprise Management Associates. ■

Mobile

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can do the heavy lifting in application processing.

That describes the experience at Pepsi Bottling Group of Somers, N.Y., and Shelflink, which was PBG's software developer for a critical new sales application built using Compact Framework.

That application is being loaded on custom-built Microsoft Pocket PC handhelds from Symbol Technologies for 6,000 Pepsi sales representatives, who call on thousands of grocery and convenience stores and other retailers every week.

"When our reps meet with a store manager, they have just a few minutes to make their sale," says Paul Hamilton, PBG's vice president of supply chain logistics. "We're giving them the ability to forecast [accurately] what a given Safeway [supermarket] will sell during a particular week. The goal is to manage inventory to zero, and out-of-stocks to zero, for the retailer." ■

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802.11g

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Nonetheless, small office/home office network vendors Buffalo Technology, D-Link, Linksys, Netgear and SMC are shipping products before the final specification, expected this summer.

"The only way to be sure the products will interoperate between different vendors is to make sure they are Wi-Fi certified," says a Wi-Fi Alliance spokesman.

The group warns that several factors can prevent interoperability. Vendor implementations of the same chip might differ, and different chipset vendors might implement various elements of the standard differently.

Vendors say there's no risk in buying the first iteration of products because a free firmware upgrade to the finalized specification will be offered. But many technical users — who have experience with these vendors — are heeding the warnings.

"I won't buy 802.11g products until the standards issues are worked out," says Tim Roussos, a sales director for a major telecom company in Ohio. "The risks of buying products now that might change far outweigh the benefits of going with that now."

g whiz

The first vendor to ship 802.11g products, Linksys has sold 300,000 products since their debut in December. On the Web, Linksys is selling twice as many 802.11g products as 802.11b offerings.

"Who pays if the products don't upgrade flawlessly?" asks Keith Krebs, an independent IT contractor from New Jersey. "The vendor? It's just a foolish situation to put oneself in. In today's environment, a mistaken choice to go with this early deployment could be disastrous."

Mike Avery takes a different approach. The Colorado freelance writer and network consultant says, "Whether I'll use 802.11g depends on how desperate my clients are for speed. I'd look at it as a disposable purchase — assuming it can pay for itself between now and the time the real thing hits the street."

However, many consumers don't know of the potential problem, nor do they understand the technology. Some assume 802.11g's 54M bit/sec speeds will yield them faster surfing, or assume the newest products are the most desirable. And even though vendors say on their Web sites and boxes that 802.11g products are prestandard, many consumers don't know — or care — what that means.

"I didn't know about this certification thing," says Bill Morgan, a contracts administrator in Birmingham, Ala. "I probably wouldn't have bought it if I knew."

"Was I supposed to have known this?" asks Dwane Labbee, who runs an antique clock business in Ventura County, Calif. "I asked a lot of vendors a lot of questions before I bought this. I don't think any of them know this either or they would have told me."

"I did a bunch of research and asked Linksys what I should buy," says Donna Arduni, a home-based accountant in Wayne, N.J. "I didn't really know the technology part of it. I just needed something quick." She plans to add to her network and use 802.11g to connect at local hot spots. "I just wanted to go with the top. I didn't know it was still in development. If I had, I wouldn't have touched it."

Dennis Eaton, chairman of the Wi-Fi Alliance, says his organization "can't tell people not to buy prestandard products."

However, he says consumers shouldn't expect to see certified products any earlier than July. Until then, "it would be nice if we could put a surgeon general's warning on the box," he adds. ■

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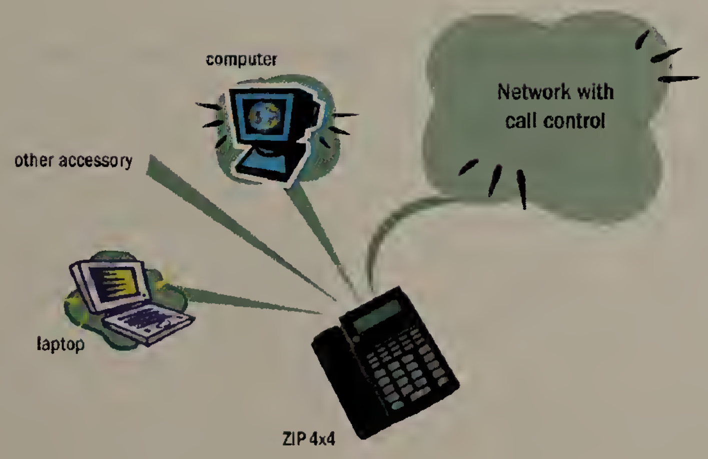

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BackSpin Mark Gibbs

Linux loved, but Windows wins

Why don't I migrate to Linux? Let me count the ways," began reader Tom Staight's response to my recent column, "Why aren't you migrating to Linux?" (see www.nwfusion.com, DocFinder:4844).

Of all the topics I've disemboweled in this space in the last year, the question of moving to Linux is the hottest. It seems almost all of you have a leaning toward Linux.

But Staight's point is important. The existence of a constellation of issues, rather than one or two dominant ones, was cited by perhaps 80% of those who wrote to me saying they aren't migrating.

It seems that unless you are building a Web server farm or have specialized needs, Linux isn't compelling yet. In general, you are trapped by your apps or by the enormous task of migration. It turns out there are galaxies of irreplaceable Windows-based apps to consider, and armies of executives and workers who all make migration, at best, really difficult.

Reader Mick Toothaker wrote: "On the server we have already evaluated Linux.... [But] of the 40-some servers I am responsible for, all of them are running some sort of server-based Win 32 application, or are Domain Controllers. One, count it, one, server is a good candidate for Linux."

Toothaker continued, "I am not some newbie who hates, fears or is otherwise ignorant of Linux. Nor am I some Microsoft flack, drone or zombie.... The fact that Microsoft is dominant in the industry [and] in my place of employment is not the best part of my job ... [but] it is a fact, one that I have to live with."

Of course in some IT shops the availability and functionality of Windows apps makes Windows the preferred solution. Nathan McCourtney wrote: "I've got 20 servers to worry about and I don't have time to learn the arcane and poorly designed system interfaces for a quadrillion different management apps, none of which do everything I need and none of which share anything close to a common design philosophy."

McCourtney added: "Microsoft is just more functional and useful. They actually <GASP!> conduct usability studies to see if people can intuitively use their apps. I don't recall any postings on SourceForge in that topic area." And if there are, I'll bet they say something like, "Users are dumb! They don't DESERVE to run Linux!!"

But even when you find a place for Linux, there are often major organizational hurdles that are hard to clear, such as the lack of Linux skills.

"The company I work for is not moving to Linux as fast as they really should, and the reason is skill set. Notwithstanding myself, everyone in the IT group is Microsoft-centric. I'm having a heck of a time trying to convince my boss to move application servers, Web servers and database servers to a system that only I have the expertise to support and maintain."

He continued: "From my manager's point of view, the lack of widely available Linux admin expertise makes deploying Linux a risky undertaking. Until the number of admins having Linux expertise grows, I don't see Linux going much further at our facility. Linux is an uphill battle I'm fighting all by myself."

So let me sum up the major themes: It seems Windows-based programs such as Exchange and scores of business applications are a huge barrier to migration, while the lack of skills and weak integration and support for Windows-like services we depend on makes it difficult to switch.

And on the desktop there are similar concerns: the scale of the change required, the affect on the organization and requirement to retrain users.

I'm starting to think companies such as IBM and Sun need to pour more money into building versions of Linux that meet these issues head on if they hope to ever make Windows an alternative rather than the best-fit solution. Unless that happens, Microsoft has us by the PCs for some time to come.

Howls of "Say it can't be so!" to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

Content delivery with a twist

Having the boss deliver a weekly taped message to every worker's PC might make sense in your organization were it not for the fact that viewing the thing in bandwidth-poor remote offices would be so painful that not even a bored secretary would watch.

Same goes for distance learning, training-on-demand and myriad other hogs that oink-oink-oink their way around your network until the screaming from IT and the rank and file gets so loud that someone pulls the plug and orders everyone into a meeting room.

It doesn't have to be this way, say the folks at Bandwiz, a Framingham, Mass., start-up that this week emerges from three years of development to begin hawking Bandwiz DistributeIT. The server software is designed to shoot your porky packages of data — CAD-CAM files, multimedia presentations, spreadsheets — hither and yon through "intelligent routing." No new hardware is required. It uses the network you've already got in place, and, through the wonders of peer-to-peer technology, the PCs that sit on those remote desktops.

Bandwiz promises that its software will prove more secure and more compatible with enterprise network infrastructure than the content-delivery network offerings from Akamai and Digital Island. As for caching hardware pushed by vendors such as Cisco and Network Appliance, Bandwiz maintains that gear is simply too expensive and labor-intensive to be feasible for many organizations.

The cost of DistributeIT is not inconsiderable: $150,000 for the server and $1,000 per site.

"What's the return on investment?" asks Bandwiz exec Dan Sapir, anticipating everyone's question of the day. "If somebody's using it."

What he means is that DistributeIT will not only give companies the oomph to deliver large payloads in a timely, efficient and secure manner, but its reporting and analytical features let the corporate brass know that the material is being accessed and for how long. In other words, if somebody's using it.

Sapir says he believes that Bandwiz has carved out a unique approach to content delivery, but he also recognizes that it won't be long until competitors follow suit.

"We have a window of about a year," he says.

Which isn't a whole lot of time when you're peddling something new, especially given the state of the economy . . . not to mention the fact we're at war.

Poetic justice for spam scammers

Two weeks ago I recounted a conversation with a State Department IT security guy who told me about U.S. embassy personnel in Nigeria routinely intervening to rescue Americans who traveled to that country to claim money promised by the notorious scam artists who send us spam every day.

Well, it turns out that those embassy workers are not the only ones trying to get between these con artists and their gullible prey.

A March 19 story in *The Wall Street Journal* tells of a handful of Web site operators who are turning the tables on the spam scammers. In a nutshell, these people have taken up a hobby that has been dubbed "scam baiting." The idea is to engage the scam artists in an ongoing exchange of e-mail and phone calls in order to waste their time and money, and, on a more basic level, yank their chains.

A quick look at some of the scam baiters' collections of correspondence shows two things: The baiters have way too much time on their hands; and there is apparently no limit to the abuse spammers will take when they are under the illusion that they have a live one on the line.

It's fun reading if you have a moment. Here are three examples of the genre: www.quatloos.com, www.sweetchilisauce.com and www.geocities.com/scamjokepage.

Goofing on the columnist is discouraged, but tolerated. Address is buzz@nww.com.

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What challenges do you face today? Decreasing budgets? The lurking possibility of downtime? It's hard enough to focus on moving your business forward when you're constantly looking over your shoulder to see if everything is up and running.

Besides, that's the job of the new HP ProLiant DL700 series running Intel® Xeon™ MP processors. An adaptive infrastructure begins with these HP ProLiant servers which come equipped with tools that predict, self-diagnose and fix many fault conditions. And now with hot-plug RAID memory exclusively from HP, you can add or replace DIMMs without turning your systems off. Both work with the HP ProLiant Essentials Foundation Pack featuring Insight Manager 7 software which monitors and controls your infrastructure for maximum uptime.

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